

LONGMANS' GEOGRAPHICAL SERIES FOR INDIA

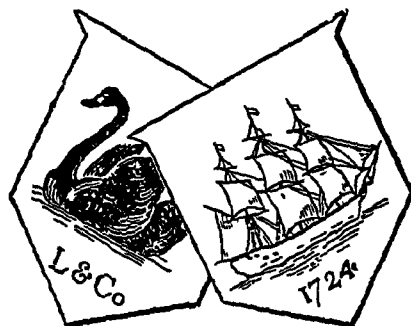
Book II.

THE WORLD

WITH FULLER TREATMENT OF INDIA

WITH 55 DIAGRAMS AND 135 MAPS

16 OF WHICH ARE IN COLOUR



NEW EDITION

LONGMANS, GREEN AND CO.

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PREFACE TO 1923 EDITION

As far as possible, maps and text have been brought up to date in accordance with the Peace Treaty.

Made in Great Britain

PREFACE

THIS book has been prepared with a special view to the requirements of candidates for the Matriculation Examination of the various Indian Universities, all the most recent syllabuses issued by those bodies having been consulted to render the work as complete as possible. The matter included is sufficient for the students in the Middle and High Departments of Anglo-Vernacular Schools, and for those of the upper classes of European Schools.

The first portion is devoted to what is usually known as Physical Geography, and a number of maps have been added to show Isotherms, Rainfall, Vegetable Products, and Density of Population

In General Geography, Asia is taken first, and in the detailed Geography of that continent the Indian Empire is fully treated in a section covering 105 pages. The whole Empire is first treated regionally, the physical features, climate, productions, and people of the Himalayan region, the great river-plain, the Deccan and Burma, being dealt with separately and exhaustively. The provinces are then taken up one by one, special attention being paid to the commercial development of each.

The continents of Europe, Africa, North and South America, and Australia are then taken up in that order, and the countries of each are treated fully.

Regional geography receives attention throughout the book, and historical geography is also included wherever it comes within the scope of the pupils for whom the book is intended. Cause and effect have been connected all through, and political and commercial features have been associated with physical wherever possible.

A characteristic feature of the book is the maps. A complete series of photo-relief, orographical, climate and rainfall, and political maps has been inserted, in which will be found the names mentioned in the text.

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LONGMANS' GEOGRAPHICAL SERIES

BOOK II

INDIAN EDITION

INTRODUCTION

1. **GEOGRAPHY** is a description of the world and its inhabitants. It may be divided into four branches —

(a) **Mathematical Geography**.—This treats, among other points, of the position of the earth in space, of its form and size, of its daily and yearly motions, and of the effects resulting from these motions.

(b) **Physical Geography**.—This treats of the natural features of the earth's surface, such as the distribution of land and water, the atmosphere and its movements, climate, the distribution of animals, plants, and minerals, and the causes which bring about changes on its surface.

(c) **Political Geography**.—This treats of the countries into which the earth's surface is divided; and of the occupations, condition, and government of the people dwelling in those countries.

(d) **Commercial Geography**.—This treats of the exchange of productions, the places where they are produced, the manner of their production, and the routes and means by which they are carried.

MATHEMATICAL GEOGRAPHY

2. If the heavenly bodies be noticed from time to time, it will be found that, while some of them always appear to occupy the

same relative position among the other stars, others change their position. Those which do not appear to move are called fixed stars, while those which change their position are called planets—that is, *wanderers*. We know that these planets revolve round the sun, and that our earth is also a planet revolving round the sun in a similar manner, at a distance of about 93,000,000 miles.

The planets, arranged in order of their distance from the sun, are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. Of these, Venus appears the brightest, because it is the nearest to us. It can easily be distinguished just after sunset or before sunrise, when it is known as the *evening* or the *morning star* respectively. Jupiter is the largest, and, although so much farther off, shows nearly as bright as Venus.

3. THE SOLAR SYSTEM.—This consists of the sun and the various heavenly bodies which revolve around it. The sun is one of the fixed stars, and appears so much larger and brighter than the other stars because it is so much nearer to us. It is an intensely hot body, of enormous size, its diameter being more than one hundred times that of the earth, while more than a million and a quarter earths would be required to make up its bulk.

4 THE SHAPE AND SIZE OF THE EARTH—The earth is in the shape of a globe, slightly flattened at the opposite sides, the greater diameter being 7,926 miles, while the diameter between the flattened parts is about $26\frac{1}{2}$ miles less. This is a very trifling difference in so large a body, so that, for all practical purposes, we may regard the earth as a globe. The earth's diameter is about 7,926 miles, its distance round, or circumference, about 25,000 miles, and the area of its surface about 197,000,000 sq miles.

The following facts are given as reasons for concluding that the earth is globular in shape —

1. If we watch a distant ship just coming into view the topsails only are visible, as she approaches, the lower sails can be seen, finally, the hull appears. Again, when a ship is sailing away from the land the hull disappears first. If the surface of the water were perfectly flat the vessel would look smaller in the distance, but one part would not go out of sight before the other. When a vessel at sea comes into sight the sailor ascends the rigging to get a better view. The man on the deck at A (fig 1) can see only the portion of the vessel which is above the line A B, but the sailor in

the rigging at c can see the portion of the vessel above c d, because he looks over the curved surface, which intercepts the view from a

FIG 1 —DIAGRAM TO ILLUSTRATE ROTUNDITY OF THE EARTH



2 It is noticed that objects of the same height come into view at the same distance in every direction This could only occur on a body of spherical shape

3 The shadow thrown by the earth on the moon in a lunar eclipse is always circular in shape The only body which throws a circular shadow at all times is a sphere

4 As all the heavenly bodies that are visible to us are globular, it is only natural to assume that the earth is of a similar shape.

5 The sun rises earlier for places to the east, and later for places to the west If the earth were flat the sun would be visible at all places on the earth's surface directly it appeared above the horizon

5 THE MOTIONS OF THE EARTH—The earth has two motions, each of which has very important results depending upon it.

I. The Rotation of the Earth—This is the diurnal or daily turning on a line, called the **axis**, which passes through the centre of the earth.

Reasons for Concluding that the Earth Turns on its Axis.—1 If the sun be observed it is found to appear in the east, to rise higher in the heavens, and after passing across the sky to disappear in the west every day The stars and moon follow a similar course This must be due either to the fact that these bodies are moving round the earth, or that the earth spins round on its axis We conclude that it is the earth's rotation which produces these appearances, on account of the incredible velocity at which the heavenly bodies would move to enable them to circle round the earth in twenty-four hours, and also because it is not probable that the sun, which is so much larger than the earth, would revolve around it

2 The earth is slightly flattened at the poles and slightly bulging at the Equator Geologists tell us that the earth was once softer than it is now, and this is the shape which a soft body takes when rotated swiftly on its axis

Results of Rotation—The daily turning, by bringing the various parts of the earth's surface successively towards the sun, causes the alternate light and darkness which we call day and night The term 'day' is used to denote not only the period of the earth's rotation, but also the time from sunrise to sunset

6 II. The Revolution of the Earth.—This is the annual or yearly motion round the sun. The earth revolves round the sun in one year, or $365\frac{1}{4}$ days, and *has its axis inclined to the plane of its path, or orbit, and constantly pointing in the same direction.* The angle of inclination is $66\frac{1}{2}^{\circ}$ to the plane of its orbit. We know that the axis must be inclined, because, if it were perpendicular to the plane of its orbit, all places on the earth's surface would have twelve hours' day and twelve hours' night; while, if the axis were parallel to the plane of its orbit, one half of the earth would have continuous light, while the other half would be enveloped in continuous darkness.

Reasons for Concluding that the Earth Revolves round the Sun.—
1 Certain stars which are visible at one period of the year pass out of sight, and reappear after a year's interval in the same place, while other stars come into view and then disappear again in their turn. These changes, which occur every year under exactly similar circumstances, show that the earth is continually changing its position in the heavens.

2 On March 21 the sun rises due east, from this date to June 21 he will be found to rise farther and farther towards the north. From June 21 to September 23 he appears to return back again to the east, and then continues to rise farther and farther south until December 21, from then to March 21 he is journeying back to due east. If the earth remained in the same position the sun would rise and set in the same points every day.

7 Results of Revolution.—The earth revolving round the sun with its axis inclined to the plane of its orbit causes *the variation in the length of day and night, and the difference in the altitude of the midday sun*, and thus brings about the changes of seasons.

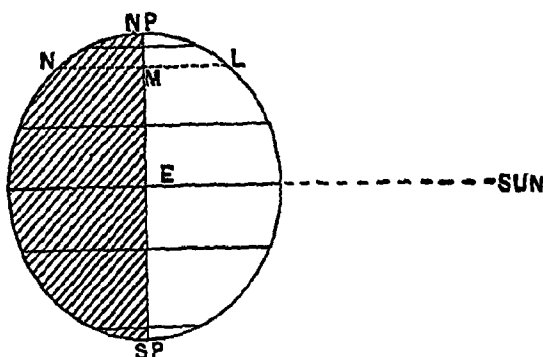
Causes of the Change of Seasons.—A consideration of the accompanying diagrams will clearly show how these causes act. As the earth flies on its journey round the sun the direction at which the sun's rays strike various parts of its surface is constantly changing, and the amount of heat received consequently varies.

If the earth's axis were perpendicular to the plane of its orbit, as in fig 2, it is evident that every place on its surface would have twelve hours' day and twelve hours' night. The regions about the Equator would be the hottest, and the temperature would decline gradually towards the poles. There would be no variation in the temperature at any given place during the year, and consequently no changes of season.

If the axis be now inclined as in fig 3, we get an explanation of the variation in the length of day and night

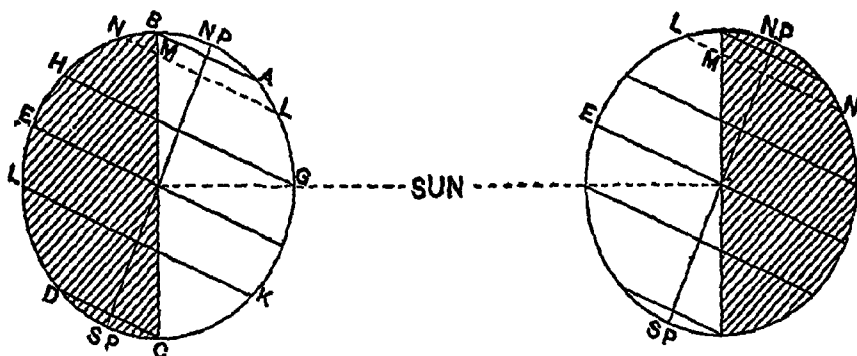
When the earth is in this position (June 21) the sun's rays extend beyond the North Pole, and, although the earth rotates on its axis, the area from *a* to *b* (fig 3) round the North Pole does not pass out of the sunlight, while the corresponding region, *c d*, around the South Pole is in continuous

FIG 2—DIAGRAMS TO ILLUSTRATE THE SEASONS



darkness The point *L*, which indicates the position of London, will remain in the light much more than half the time of rotation When the earth has accomplished half its revolution, which it does on December 21, the conditions are reversed. The South Pole is now turned towards the sun, the southern hemisphere is in the midst of its summer, while the northern hemisphere receives less heat and is in the midst of winter. The

FIG 3

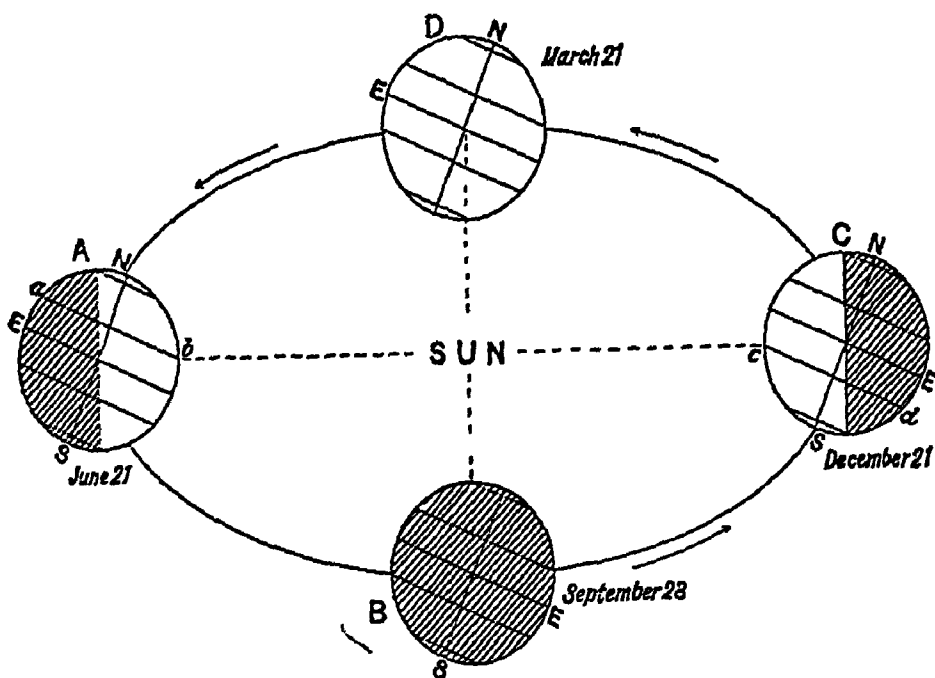


point *L* will now be much longer in the shaded than in the light half during rotation

Midway between the positions just mentioned corresponding to *a* and *c* (fig 4), the sun is exactly overhead at midday on the Equator, and days and nights are equal everywhere These positions are called on that account the Equinoxes. *B* is the Autumnal Equinox (September 23), and *D* is the Vernal or Spring Equinox (March 21)

8 The earth's axis being inclined at an angle of $66\frac{1}{2}^{\circ}$ to the plane of its orbit, it follows, as has already been stated, that the sun's rays on June 21 (the summer solstice) reach a distance of $23\frac{1}{2}^{\circ}$ beyond the North Pole. A circle drawn round the earth at this distance from the North Pole is called the Arctic

FIG 4 — DIAGRAM TO ILLUSTRATE THE SEASONS



Circle, while one at a similar distance from the South Pole is termed the Antarctic Circle. Within these circles every place has at least one period during which the sun is above the horizon for more than twenty-four hours. At the poles the sun is visible for six months and out of sight for six months.

When the sun's rays reach $23\frac{1}{2}^{\circ}$ beyond the North Pole, he is then at his zenith, or overhead at places $23\frac{1}{2}^{\circ}$ north of the Equator. A circle drawn round the earth at this point is called the Tropic of Cancer, while a similar circle $23\frac{1}{2}^{\circ}$ south of the Equator is called the Tropic of Capricorn. Within these tropics every place has the sun overhead twice during the year.

9. EFFECT OF THE SUN'S RAYS ON THE EARTH'S SURFACE—The amount of heat received from the sun is greatest when the sun is highest in the heavens, and, consequently, when its rays strike the ground more perpendicularly. This is due to two causes —

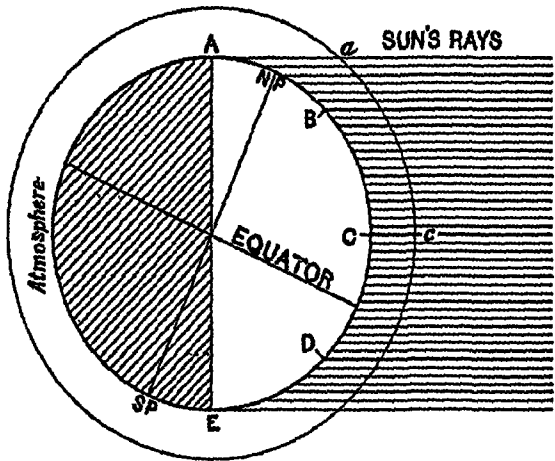
(1) When the sun is at its highest point the number of rays received by any one part of the earth's surface is greater than when the sun is lower.

(2) The sun's rays pass through less atmosphere, and thus lose less of their heat, when the sun is at its highest point.

The effect of these two causes may be seen from a consideration of fig. 5.

(1) If A B, B C, C D, and D E represent equal portions of the earth's surface, it will be seen that the portions B C, C D, where the sun's rays are more nearly perpendicular, receive a much larger number of rays than the parts A B and D E, where the rays fall more slanting.

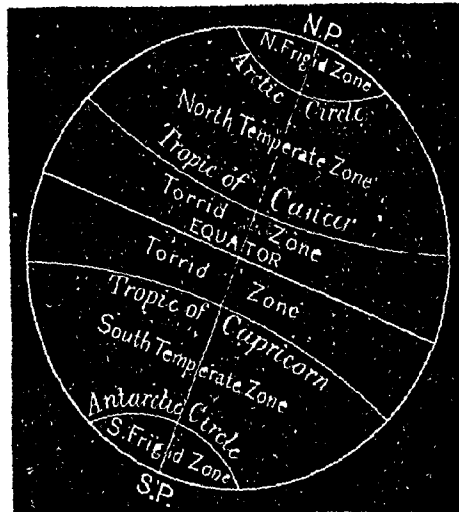
FIG. 5.—DIAGRAM TO ILLUSTRATE THE SEASONS



(2) If the outer circle be supposed to represent the limit of the atmosphere, it will be seen that the rays at A and E pass through a much greater distance of atmosphere than the rays at C, which fall more perpendicularly. A a is much greater than C c.

10. THE ZONES.—We see from the preceding paragraphs that the regions near the Equator, where the midday sun is *always very high*, are the hottest, those near the North and South Poles, where the sun is *never very high*, are the coldest; while between these lie regions neither very hot nor very cold. These five broad divisions are called *zones*. Their boundaries are determined by the sun's mid-day altitude

FIG. 6.—THE ZONES.



The Tropics of Cancer and Capricorn mark the farthest points north and south at which the midday sun is seen overhead. Between these limits lies on the whole the hottest part of the earth's surface, and it is called on that account the *Torrid Zone*

The Arctic Circle marks the boundary of the North Frigid Zone, and the Antarctic Circle that of the South Frigid Zone. Within these limits the sun's altitude never exceeds $23\frac{1}{2}^{\circ}$, consequently little heat is received from its rays, and these regions are the coldest parts of the world.

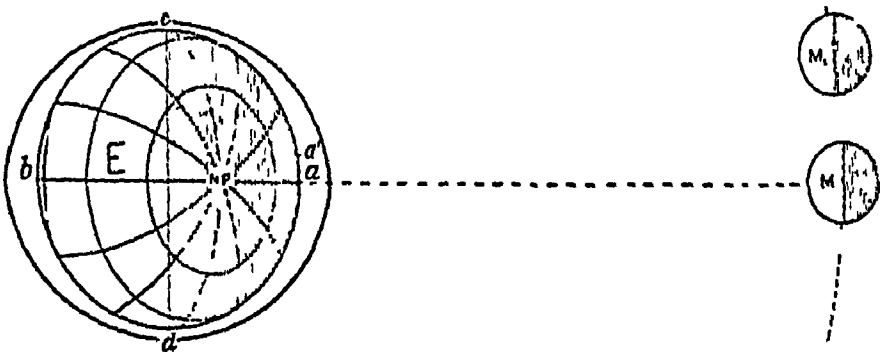
Between the Arctic Circle and the Tropic of Cancer lies the North Temperate Zone, and between the Antarctic Circle and the Tropic of Capricorn lies the South Temperate Zone. In these two zones the heat is not so great as to sap the energy of the inhabitants, nor the cold so intense as to prevent industrial occupations being carried on throughout the year.

It must be borne in mind that the Tropics of Cancer and Capricorn mark not only heat zones, but light zones also. The only region on the earth's surface in which the rays of the sun can fall vertically is between the Tropics, and the only regions in which the 'midnight sun' can be seen are within the Arctic and Antarctic Circles.

11. EFFECT OF THE ATTRACTION OF THE SUN AND MOON.—THE TIDES.—Tides are the well-marked rising and falling of the waters of the earth under the influence of the attraction of the sun and moon. Their height and period of recurrence can be calculated with such precision that an account of the tides finds a place under Mathematical Geography. The rising of the water produces the flood tide, and its falling the ebb tide.

The Moon's Influence in causing Tides.—Suppose E (fig. 7) to represent the earth covered with water to a uniform depth,

FIG 7 —THE TIDES



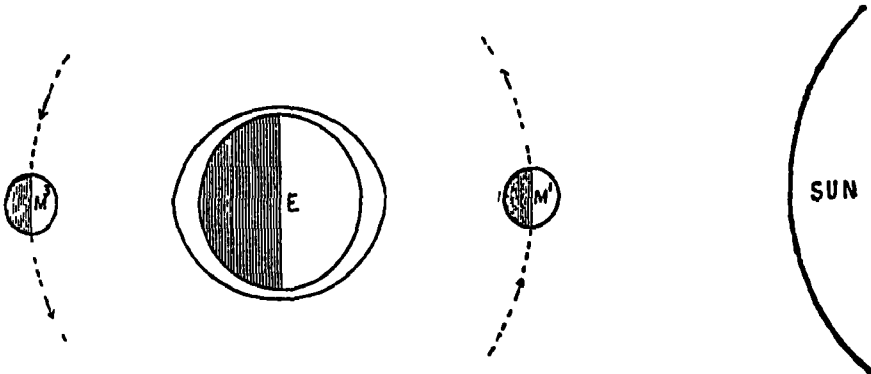
and M the moon. The attraction exerted by the moon on the earth is greatest at *a*, because *a* is nearest to the moon, and, as the water moves with much greater freedom than the solid land, it will be drawn away from *c* and *d*, and heaped up at *a*, causing high tide. Again, the solid earth, being nearer to the moon than the

water at b , is attracted more strongly, and drawn away, as it were, from the water at a , thus causing another high tide at the same time on the opposite side to a . Between a and b there will be **low tides** on both sides of the earth.

The earth's rotation causes each place on the ocean to have two high tides and two low tides every day. The interval between high tide and the corresponding high tide next day is nearly 25 hours (24 hrs 51 min). This is due to the fact that the moon is also revolving round the earth, and that while the earth has been rotating on its axis the moon has moved on to position M_1 , and the point a would require nearly an hour longer to come to a^1 , the position for high water.

12. The Sun's Influence in causing Tides.—At new and at full moon (M^1 and M^3 , fig. 8) the sun, being in a line with the moon

FIG 8 - SPRING TIDES



and the earth, exerts its influence in the same direction, and thus causes every fortnight a higher tide than usual. These are called **Spring Tides**.

At half-moon (M^2 and M^4 , fig. 9) the influence of the sun is exerted at right angles to that of the moon, and hence the tides are not so high as usual. These lower tides are called **Neap Tides**.

13 Direction of Tides—In speaking of the theory of tides, it has been assumed that the water of the ocean was of uniform depth and that there were no land masses. If this were so, there would be two tidal waves passing round the earth, from east to west, and accomplishing the journey in 24 hrs 51 min. In mid-ocean the tide is merely a rising and falling movement of the water. This movement of the tide is completely changed and converted into an onward movement by—

(1) The variation in the depth of the ocean, which alters its rate of motion, the tidal wave moving most rapidly in deep water

The Arctic Circle marks the boundary of the North Frigid Zone, and the Antarctic Circle that of the South Frigid Zone. Within these limits the sun's altitude never exceeds $23\frac{1}{2}^{\circ}$, consequently little heat is received from its rays, and these regions are the coldest parts of the world.

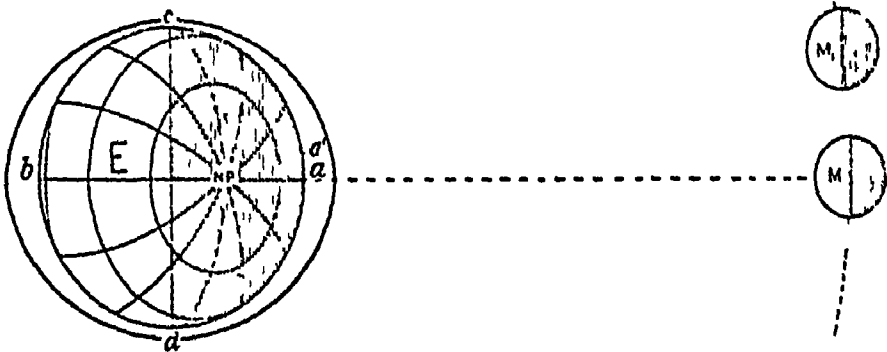
Between the Arctic Circle and the Tropic of Cancer lies the North Temperate Zone, and between the Antarctic Circle and the Tropic of Capricorn lies the South Temperate Zone. In these two zones the heat is not so great as to sap the energy of the inhabitants, nor the cold so intense as to prevent industrial occupations being carried on throughout the year.

It must be borne in mind that the Tropics of Cancer and Capricorn mark not only heat zones, but light zones also. The only region on the earth's surface in which the rays of the sun can fall vertically is between the Tropics, and the only regions in which the 'midnight sun' can be seen are within the Arctic and Antarctic Circles.

11. EFFECT OF THE ATTRACTION OF THE SUN AND MOON.—THE TIDES.—Tides are the well-marked rising and falling of the waters of the earth under the influence of the attraction of the sun and moon. Their height and period of recurrence can be calculated with such precision that an account of the tides finds a place under Mathematical Geography. The rising of the water produces the flood tide, and its falling the ebb tide.

The Moon's Influence in causing Tides.—Suppose E (fig. 7) to represent the earth covered with water to a uniform depth,

FIG. 7 —THE TIDES



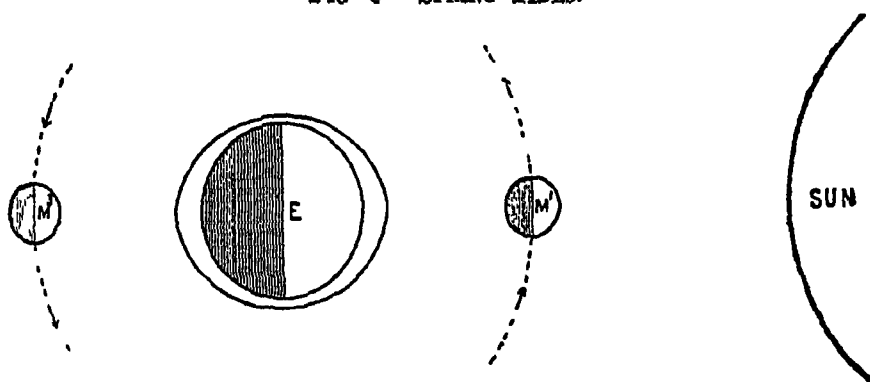
and M the moon. The attraction exerted by the moon on the earth is greatest at *a*, because *a* is nearest to the moon, and, as the water moves with much greater freedom than the solid land, it will be drawn away from *c* and *d*, and heaped up at *a*, causing high tide. Again, the solid earth, being nearer to the moon than the

water at b , is attracted more strongly, and drawn away, as it were, from the water at a , thus causing another high tide at the same time on the opposite side to a . Between a and b there will be low tides on both sides of the earth.

The earth's rotation causes each place on the ocean to have two high tides and two low tides every day. The interval between high tide and the corresponding high tide next day is nearly 25 hours (24 hrs 51 min). This is due to the fact that the moon is also revolving round the earth, and that while the earth has been rotating on its axis the moon has moved on to position M_1 , and the point a would require nearly an hour longer to come to a' , the position for high water.

12 The Sun's Influence in causing Tides.—At new and at full moon (M^1 and M^3 , fig. 8) the sun, being in a line with the moon

FIG 8 - SPRING TIDES.



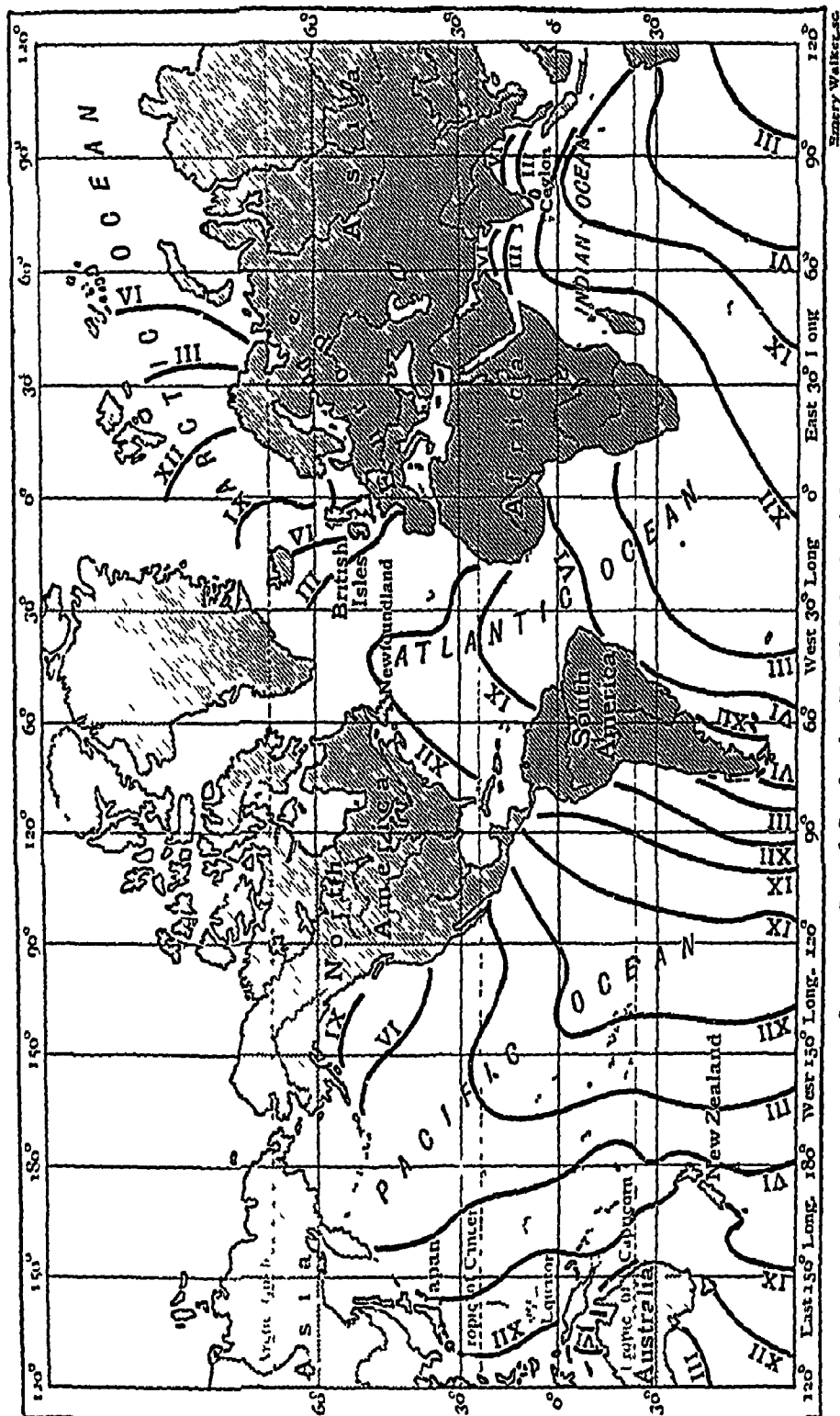
and the earth, exerts its influence in the same direction, and thus causes every fortnight a higher tide than usual. These are called **Spring Tides**.

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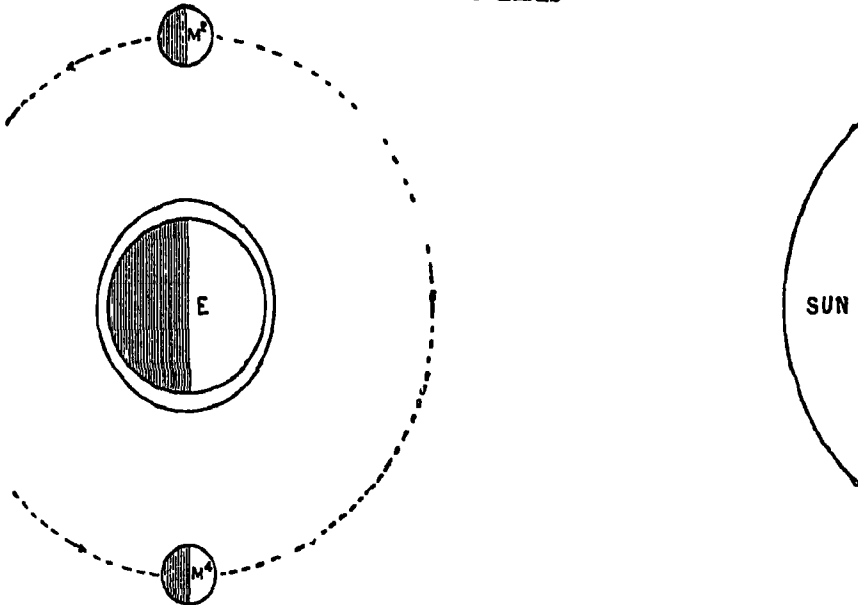
(1) The variation in the depth of the ocean, which alters its rate of motion, the tidal wave moving most rapidly in deep water.

FIG 10—CO TIDAL LINES.



(2) The configuration of the land, which impedes and retards its course
In the South Pacific, where there are no great land masses to interfere with the progress of the tidal wave, its crest runs north and south. It will be seen from the map that these lines, which mark the places having high water at the same time, become greatly bent towards the north. These lines

FIG 9 — NEAP TIDES



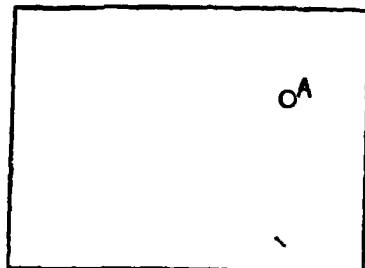
are called Co-tidal Lines. In the South Atlantic the lines have a general north and south direction, but owing to the causes previously mentioned gradually turn quite round, and the tidal wave advances towards Northern Europe from the west.

The tide often advances up funnel-shaped river mouths as a great wave called a bore. The bores of the Hugi, Seine, Garonne, and Amazon, are of considerable magnitude. Perhaps the most striking example is that of the Tsien-tang, in China, where the bore is sometimes 30 feet in height, and travels at the rate of 20 miles an hour.

FIG 11 — DIAGRAMS TO ILLUSTRATE LATITUDE AND LONGITUDE.

14. LATITUDE AND LONGITUDE.

By the latitude and longitude of a place is meant its position on the earth's surface. Suppose fig. 11 to represent a portion of the earth's surface, and A to mark the position of a particular place. If we are required to state the situation of A, we can only do so approximately by saying that



it is near the top right-hand corner. If a series of vertical lines be drawn, one of which passes through A, we can fix its position with regard to the sides of the figure, it being somewhere on line 7 (fig. 12). If we now draw a number of horizontal lines (fig. 13) it is easy to state its exact position. It is on vertical

FIG 12

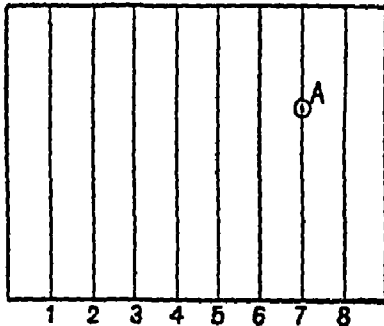
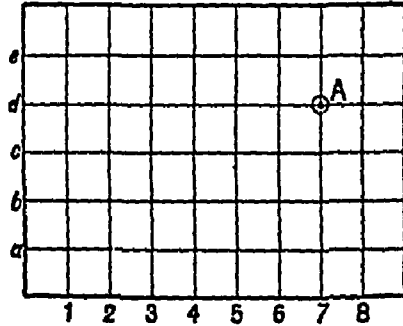


FIG. 13



line 7 and horizontal line *d*, therefore it must be where these lines intersect.

15. If a point be marked on a globe, it is still more difficult to define its position, there being no fixed sides from which we can measure its distance. If, however, the globe be rotated, we at once get two fixed points, the ends of the axis of rotation, which do not move with the rest of the surface.

As the earth rotates on its axis, we are furnished with two fixed points, the North and South Poles, from which places can be measured. But as it is more convenient to measure from one fixed point than from two, the Equator, which is drawn round the globe midway between the poles, is chosen as the standard line from which distances can be measured to the north or south.

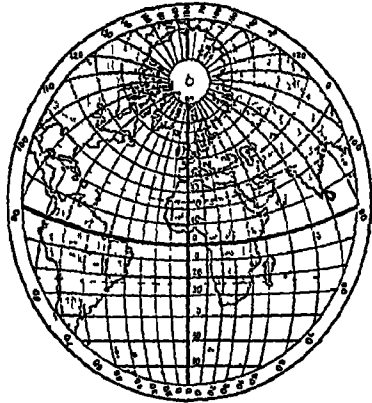
The distance of any place north or south of the Equator is called the Latitude of that place

To enable us to fix the position of a place more accurately, circles are drawn round the globe parallel to the Equator. These circles are called *Parallels of Latitude*.

16 For convenience in measurement, every circle is supposed to be divided into 360 equal parts called degrees ($^{\circ}$). Each degree is subdivided into 60 minutes ($'$), and each minute into 60 seconds ($''$). The distance from the Equator to either pole is one-fourth of a circle, hence the parallels of latitude are numbered from 0° to 90° from the Equator to both poles. The Equator is 0° latitude, the North Pole is 90° N latitude, and the South Pole is 90° S latitude.

17. It will be seen that the **Parallels of Latitude** enable us to fix the distance of any place from the Equator, north or south. To exactly locate it we must fix its position in the other direction—viz. east and west. To do this, we imagine the Equator to be divided into 360 equal parts, and through each of these parts a circle to be drawn passing through both poles. By means of these circles we fix the position of a place east and west. Before this can be done, however, it is necessary to choose one line to measure from. For the British Empire the half-circle passing through Greenwich is chosen as the fixed line, and is numbered 0° . The other half circles are numbered 1° , 2° , 3° , &c., up to 180° , east and west of this line. These half-circles are called **Meridians**, because all places on the same half-circle have their noon at the same time. When it is *midday* to places on one half of the circle, it is *midnight* to places on the other half.

FIG 14 —LATITUDE AND LONGITUDE



These meridians are called **Lines of Longitude**, and the *Longitude of a place is its distance east or west of a fixed meridian*

We thus see that if the latitude and longitude of a place be known, its position on the earth's surface is at once defined. For example, when we say a place is in 50° N latitude and 23° E longitude, we mean that it is situated where the 50th parallel north of the Equator cuts the 23rd meridian east of Greenwich.

18 The parallels of latitude are drawn at equal distances on maps, and a degree of latitude is nearly of the same length at any part of the earth's surface. Careful measurements show that the length of the degree increases slightly towards the poles, owing to the slight flattening around these points. *A degree of latitude may be taken to be equal to about 69 miles.* The lines of longitude, however, converge as they approach the poles, and the length of a degree of longitude consequently decreases. It is only at the Equator that it is about 69 miles, in the latitude of Calcutta it is about 64 miles, in the latitude of London ($51\frac{1}{2}^\circ$ N) it equals 42 miles, while in latitude 80° it measures only 12 miles.

19 The earth rotates once in twenty-four hours, but it is evident that a place situated on the Equator is carried round at a much greater velocity than one

14 LONGMANS' GEOGRAPHICAL SERIES FOR INDIA, BK II

situated near the poles At the Equator the velocity is over 1,000 miles per hour, in latitude 60° it is 500 miles, in latitude 89° it is only 18 miles per hour, while at the poles the motion has entirely ceased.

20. How Longitude is determined.—It is necessary for sailors and explorers to fix their position by finding their latitude and longitude at frequent intervals. This is determined by observations of the heavenly bodies.

As the earth turns on its axis from west to east at an absolutely uniform rate, every meridian is brought successively in front of the sun once every day. That is, 360° are turned round in twenty-four hours. This gives $\frac{360}{24}^\circ$, or 15° for each hour, or 1° for every 4 minutes. Thus, at New Orleans, which is 90° W of Greenwich, noon will be six hours after it has passed at Greenwich, or when it is noon at Greenwich it is 6 A.M. at New Orleans; while at Dacca, 90° E, when it is 12 noon at Greenwich it will be 6 P.M. at the former place. Again, if there be a difference of two hours between the times of two places, then we know that the places are 30° apart.

Hence, if we have given the longitudes of two places, we can find the difference between the time of day, and, *vice versa*, if we know the difference between the time of two places, we can determine how many degrees they are apart.

At sea, longitude is usually determined in the following manner. Noon at the place is found by noting when the sun is at its greatest altitude; the time at Greenwich at that instant is obtained from a chronometer previously set to Greenwich time, from the difference between the two times the observer may easily deduce his longitude east or west of Greenwich.

For example, suppose at noon that the chronometer indicated Greenwich time to be 12 48, then the place would be $\frac{48}{4} = 12^\circ$ W of Greenwich, while if the time at Greenwich was 48 minutes to 12, the place would be 12° E. of Greenwich, noon being 4 minutes earlier for each degree to the east and 4 minutes later for each degree to the west.

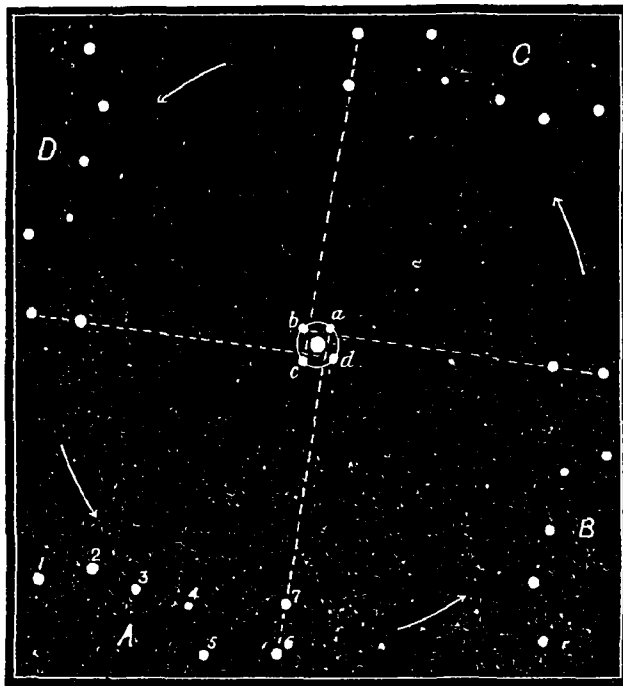
21. How Latitude is determined.—The latitude of a place north of the Equator is most easily determined by measuring the mean altitude of the Pole Star above the horizon. At the Equator the observer would see the Pole Star on the horizon, at a distance of 69 miles to the north it would be 1° above the horizon, and so for every degree of latitude passed over the star rises 1° in altitude, until at the pole it would be found to be overhead. For example,

if at a place the altitude of the Pole Star were found to be 40° above the horizon, then the place would be in 40° N. latitude.

At sea it is more convenient to determine the latitude from observations of the sun at noon.

22 The Pole Star—The points in the heavens directly over the North and South Poles are called the Celestial Poles. There is a bright star near the Celestial North Pole called on that account the Pole Star, and which, being over the North Pole of the earth, always appears in the same position. It really describes a small circle, as shown in fig. 15, the centre of that circle being the

FIG 15.—DIAGRAM TO ILLUSTRATE THE POSITION OF THE POLE STAR.



true Celestial North Pole. When we are looking at that star we are facing the North Pole of our earth.

To find the Pole Star, look towards the north, where a group of seven bright stars will be seen arranged as in A, fig 15. This group or constellation is known as the Great Bear or the Plough. The two stars 6 and 7, known as the Pointers, always point to the Pole Star. If this group be observed, it will appear to revolve around the Pole Star in the course of twenty-four hours. Fig 15 shows the constellation in four positions. It will be noticed that in each position the pointers still point to the Pole Star.

The Compass furnishes a readier means of finding the north. The magnetic needle, when suspended freely, points nearly north and south. It does not, however, point to the North Pole, but to a spot called the Magnetic Pole, which is on one of the islands to the north of North America in $70^\circ 51'$ N. and $96^\circ 46'$ W.

EXAMINATION PAPERS

- A.** 1. Distinguish between mathematical, physical, political, and commercial geography
 2 Explain the terms 'fixed star,' 'planet,' 'solar system,' 'morning and evening star'
 3 How can you prove that the earth is approximately spherical?
 4. The two movements of the earth are rotation and revolution Give reasons for concluding that these movements take place
- B.** 1. Explain why the days and nights are not of equal length throughout the year What is the cause of the regular succession of the seasons?
 2. Where are the Tropic of Cancer and the Arctic Circle situated? What do they indicate?
 3. Explain why the polar regions do not receive so much heat from the sun as the regions near the Equator Draw a diagram to illustrate your answer
 4 Explain the terms 'zenith,' 'tropic,' 'orbit,' 'equinox'
- C.** 1. Explain the action of the moon in causing tides, and state why the interval between high tide and the corresponding high tide next day is nearly 25 hours
 2. Why are tides at new and full moon higher than those at other times? What are these tides called?
 3. What circumstances cause the tidal wave to move onwards?
 4 Explain why the tide rises higher at some places than at others
- D.** 1 What are the zones? How are their boundaries determined?
 2. Show why it is necessary to use two sets of lines to indicate the position of a place
 3. What is a degree of latitude? Why do the degrees of longitude decrease in length as they approach the poles?
 4. Explain how the longitude of a place is determined
- E.** 1 An observation is taken at noon The chronometers show Greenwich time to be 1 48 P M What is the longitude of the place?
 2. When it is 2 15 P M on the meridian of 7° W, what is the time at Greenwich?
 3 Two places are $12\frac{1}{2}^{\circ}$ apart What will be the difference in their times?
 4. A telegram is handed in at London at noon What will be the time when it is received in Madras, longitude 80° E, supposing it to take 15 minutes in transmission?
- F.** 1. What is the Pole Star? How may its position be found?
 2 How may the latitude of a place be determined from the Pole Star?
 3 What is the mariner's compass, and for what purpose is it used?
 4 Explain the following terms 'celestial north pole,' 'magnetic pole,' 'altitude,' 'horizon'

MAPS AND THEIR CONSTRUCTION

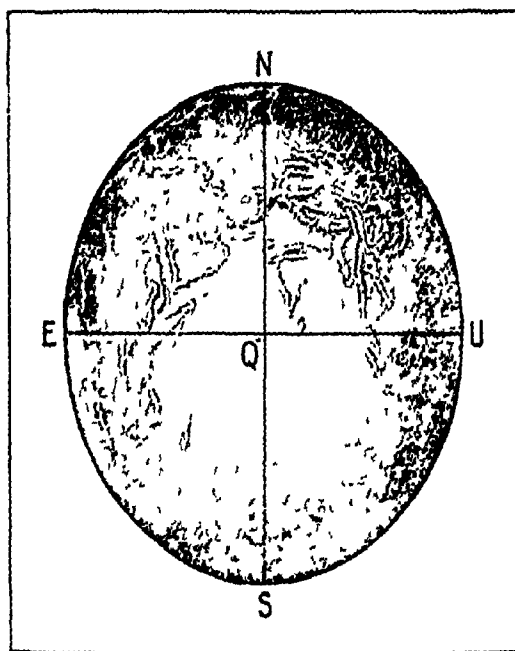
22A. So far the position of places on the earth's surface has been considered by reference to a globe, which is an exact representation of its shape on a small scale. Model globes on which the chief features have been marked are commonly constructed, but they are not large enough to show any but the most important outlines, and a globe showing any degree of detail would have to be of such large size that it would be very *costly and very inconvenient* for study. Some convenient form of representation is, however, very necessary. The Government requires to keep a record of the boundaries of its territory, and to mark down such features as mountains, rivers, roads, railways, &c.; the student requires to locate the places of which he reads; and the navigator needs a chart in order that he may steer his ship in the right direction from port to port. This need is supplied by maps, but a moment's thought will show that the preparation of an accurate map is not an easy matter, for the earth's surface is curved and maps are flat. Take a piece of paper and spread it over a portion of the globe. It cannot be made to lie evenly, and the larger the section of the globe to be covered the more the paper will have to be crumpled in the effort to make the two surfaces coincide. The earth is, of course, so large that a small portion of its surface, such as a town or district, can be faithfully represented on a flat map, but, as in the case of the model globe, the larger the area to be represented the greater the inaccuracy becomes.

The ordinary method of obtaining a picture of an object is by taking a photograph. Is it not possible to obtain maps by photographing a model globe? Let fig. 15a be a photograph of the surface of one hemisphere. The semicircles ENU and ESU represent the half-circumferences of the globe passing through the North and South Poles, and terminated each way by the Equator. The straight lines EQU and NQS also represent half-circumferences, EQU being half the Equator and NQS a meridian of longitude. If we assume the globe to be a sphere, these four lines should be of equal length, but EQU and NQS are obviously

much shorter than ENU and ESU , and as a map the figure is therefore inaccurate. That part of the photograph in the neighbourhood of Q is more or less in proportion, but as we proceed outwards to the circumference of the circle the map becomes more and more distorted.

This photographic map illustrates the two chief forms of inaccuracy which the map-maker has to endeavour to overcome. These relate to (a) *distance*, and (b) *direction*. We have seen that the areas on the outside are relatively smaller than those

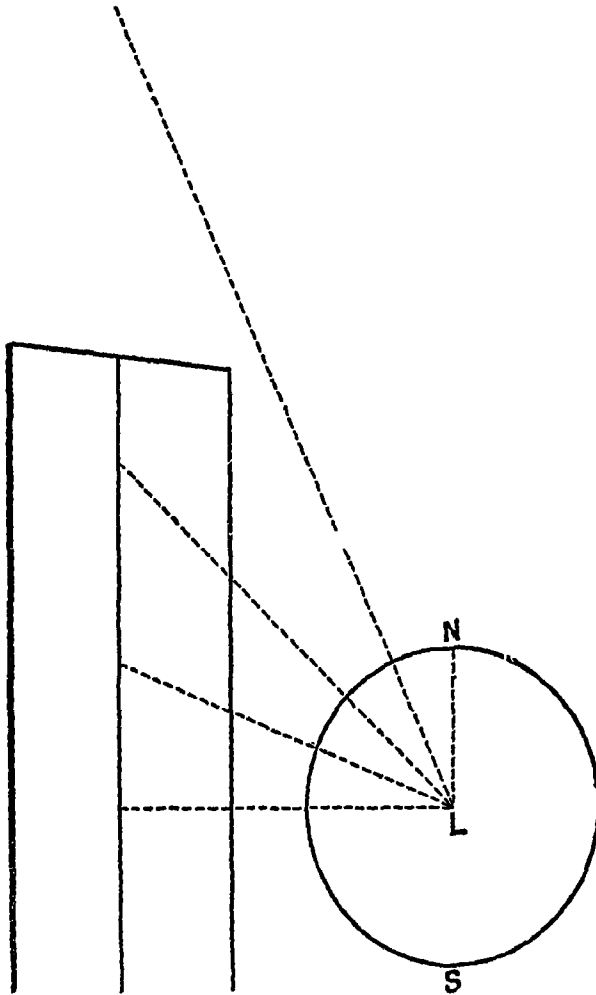
FIG 15a



nearer the centre, in other words, that distances are not represented on a uniform scale all over the map, and the inaccuracy as regards direction will be readily seen when it is remembered that on the globe lines of latitude and longitude cross each other at right angles

22b. PROJECTION.—Before proceeding to the methods by which these inaccuracies are corrected, let us consider the general principle underlying the representation of a curved surface on a plane. Suppose we take a hollow glass sphere with the surface features of the earth painted upon it in black, and place a bright light at the centre and a screen at some distance. The shadow

of the black lines will appear on the screen and we shall have a map, but it is evident that from the centre of the screen to its edges the outlines will be gradually exaggerated (fig. 15*b*). With the light in this position it is impossible to produce a map of a complete hemisphere, for the rays passing through the circle

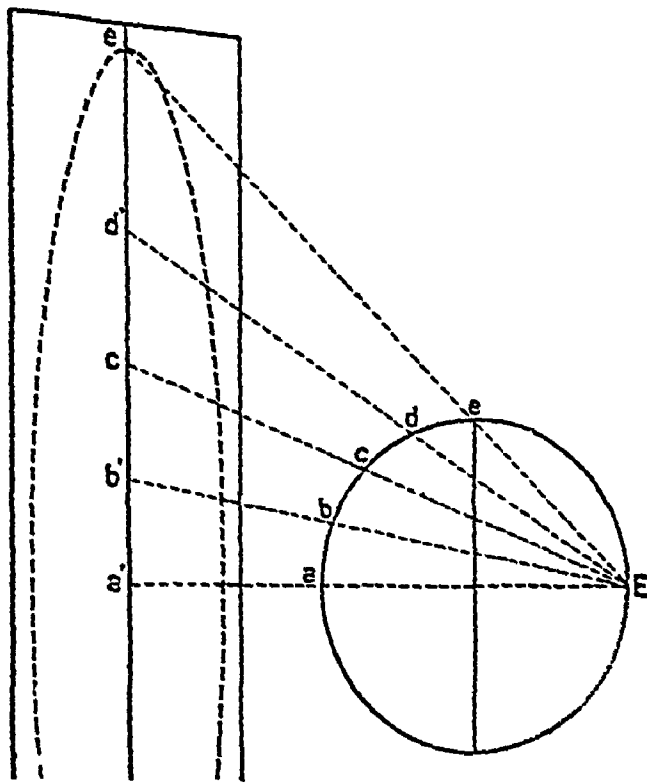
FIG 15*b*

bounding the hemisphere will be parallel to the screen, and will therefore never meet it, but this experiment is a simple illustration of the method used in map construction, viz the throwing forward of the features of the globe on to the flat surface of the screen. This 'throwing forward' is called projection. Different methods of projection are employed according to the size of the

area to be represented, and the particular kind of inaccuracy to be corrected.

(1) **Stereographic Projection.**—In the above experiment the light was placed in such a position that the whole of the surface of a hemisphere could not be projected on to the screen. Let us suppose the light drawn back to the position π (fig. 15c). The rays passing through the circle bounding the hemisphere can now reach the screen, but there is still exaggeration as the out-

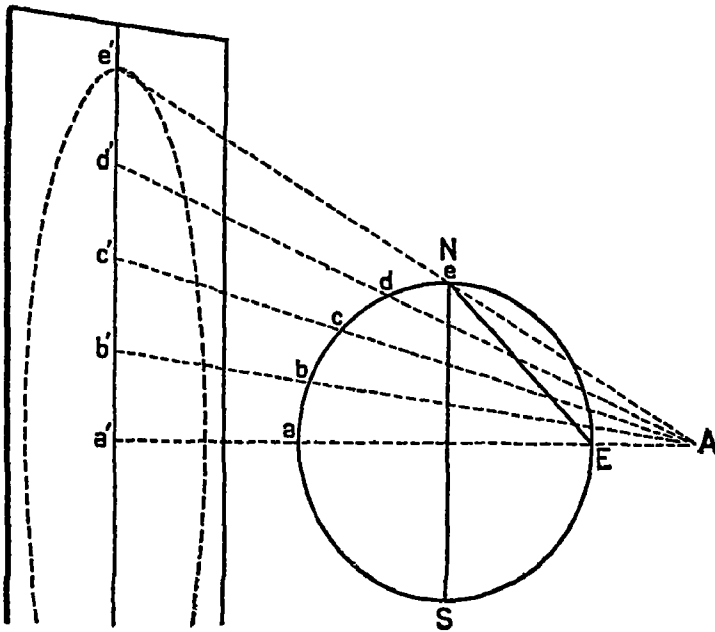
FIG 15c.



side of the map is reached, for while the sections from a to c on the globe are equal, the corresponding sections a' to c' on the screen gradually increase in length from the centre outwards. The centre of this map is, however, sufficiently correct to be of value and it is important to note that, although distances are not quite accurately represented, lines drawn on the globe are so projected on to the map that they cut at the same angle, and direction is therefore correctly shown. This projection—the **Stereographic**—is usefully employed in representing the central portion of a hemisphere, e.g. the Polar regions.

(2) **Globular Projection.**—The most accurate projection of the hemisphere on to a flat surface is obtained by imagining the light drawn still further back to a position A such that AE is equal to half of EN , that is, half the chord of the quarter-circumference. It will be observed that equal distances on the globe are now projected as almost equal distances on the map. The outer portions of the map are still somewhat distorted, but this projection is nevertheless the most satisfactory for representing the world in hemispheres

FIG 15d

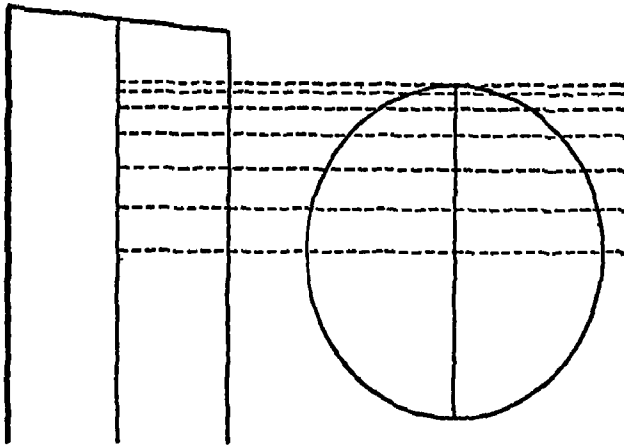


Modifications of the Globular and Stereographic projections are prepared by the help of mathematical calculation, so as to represent equal areas on the globe by equal areas on the map. Such projections are called **Equal-area projections**, and while they have the advantage of being accurate as to distance, they possess also the disadvantage of showing direction incorrectly.

(3) **Orthographic Projection.**—In the above examples we have seen that when the light was at the centre of the globe there was *great exaggeration towards the edges of the map*, and that as the light was drawn back this exaggeration gradually decreased until the position A (fig. 15d) was reached, at which a maximum

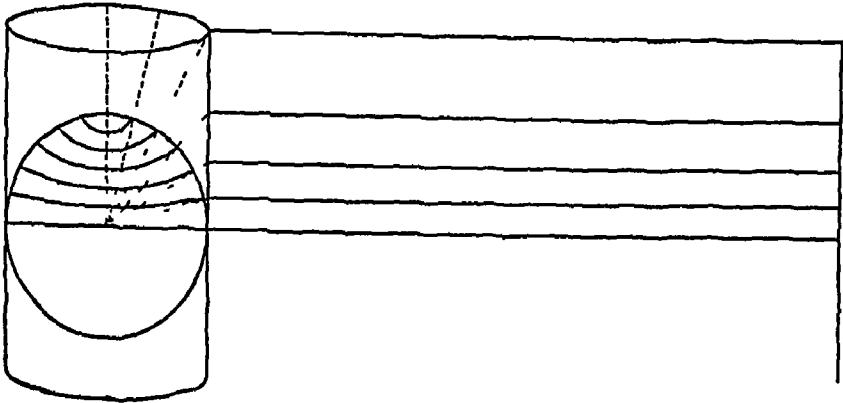
of accuracy was obtained. If the light be drawn still further back, the map again becomes out of proportion, but the edges are now diminished as compared with the centre. Let us imagine the light to be withdrawn to an infinite distance—*e.g.*, the light

FIG 15e



of the Sun. The rays may now be considered parallel, and the projection is as in fig. 15e. This is called **Orthographic Projection**, and it is employed in producing maps requiring accuracy in the central portion.

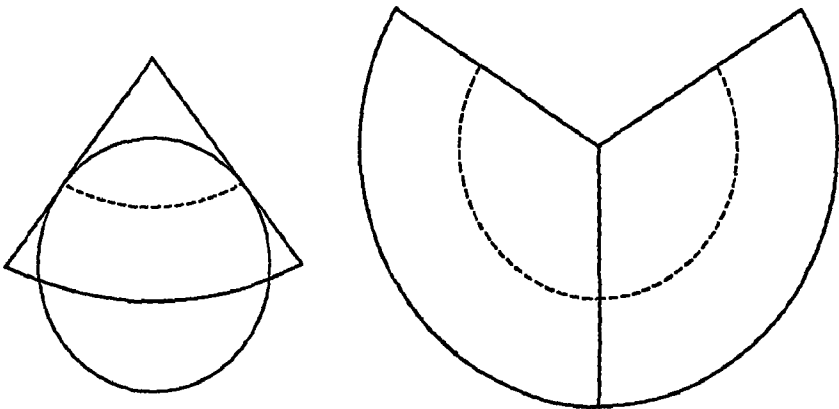
FIG 15f



(4) **Cylindrical Projection.**—Instead of placing a screen at some distance, let us suppose it to be wrapped round the globe in the form of a cylinder, so that the axis of the globe passing through the North and South Poles coincides with the axis of the cylinder, and the two surfaces touch along the line of the

Equator. If we now imagine a light placed at the centre of the globe, the surface features will be projected on to the inner surface of the cylinder. If the cylinder be now unwrapped we shall have nearly all the surface features on one sheet (It is evident that the North and South Poles can never be represented on this projection, as the rays passing through these points will be parallel to the sides of the cylinder—see fig. 15 *f*.) On this map the Equator is the only line which is accurately represented. The lines of longitude are too long, and the lines of latitude are all shown equal in length instead of becoming shorter as the Poles are approached, moreover, the distance between them increases enormously from the Equator outwards. As regards

FIG 15*g*



distance, then, this projection is altogether inaccurate, but it has the great advantage of showing direction with absolute accuracy—*i.e.* lines running North and South are at right angles to those East and West. This accuracy of direction makes the map produced on a Cylindrical Projection of great use to sailors, and a modification of it, called Mercator's Projection, is in universal use on ships. The map on page 58 is on Mercator's projection.

(5) Conical Projection.—It is obvious that in the cylindrical projection the surface of the globe and the surrounding cylinder can only come in contact along a great circle (*i.e.* a line of full circumference), the only practical line of coincidence being the Equator. Another method of projection makes this line of coincidence possible along any line of latitude, and it is therefore employed in producing maps of countries and other relatively

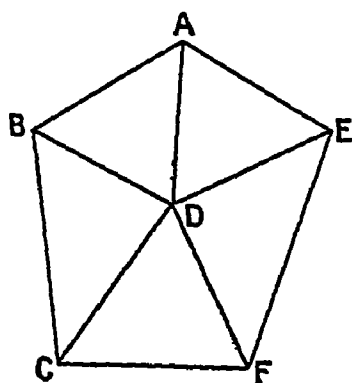
small areas. Let us imagine the globe fitted into a cone, as in fig 15g. The line of greatest accuracy is the circle along which the two surfaces come into contact, and above and below this line the features are gradually exaggerated. To reduce this inaccuracy to a minimum the method of projection is modified, and the cone is supposed to cut the globe so that the centre of the required map lies midway between the two parallel lines of intersection of cone and globe. Conical Projection is the method employed in preparing most of the maps in an ordinary atlas.

NOTE—It must be borne in mind that in the above examples, only the *method* of projection has been illustrated. The globe and light are not actually used in map making, but the relative positions of lines of latitude and longitude are obtained by mathematical calculations. It should also be remembered that the only absolutely accurate map is that drawn on a curved surface—the various projections being employed to remove one or other of various inaccuracies, no one projection being capable of removing them all.

22c. MAP-MAKING BY ACTUAL MEASUREMENT.—

Before the globe can be used for making projections, it is evident that the surface features of the Earth must be faithfully represented upon it, and this can only be done by actual measurement on the Earth's surface. One method of measurement, by the determination of latitude and longitude, has been explained on page 14. A second method is by surveying, and so important is this method

FIG 15h



that in most countries a Government Department makes this its sole work; for example, the Department of the Survey of India employs a large number of surveyors in constructing detailed maps of every part of the Indian Empire. A simple illustration will show how the work is done. Let us suppose we wish to map an open piece of country, A B C F E (fig 15h), in which six trees, A, B, C, D, E, F, are easily visible. The first

thing to do is to measure very carefully a base-line—say, the distance between A and B. Then by means of an instrument called a theodolite the angles A B D and B A D are measured.

Now we know by trigonometry that if one side and two angles of a triangle be given, the remaining sides and angle can be easily found ; so, having ascertained the length of AB and the measurement of the angles ABD and BAD , we have sufficient data to map the triangle ABD . The same process may now be repeated with the other triangles, except that it will be unnecessary to measure a second base-line, the lengths of new base lines, *e.g.* BA and AD , being ascertained by calculation for each new triangle. This method of measurement is called *triangulation*, because the basis of all calculations is the triangle.

In putting this method into practice the chief difficulty is the selection of suitable stations. As in the above instance, they must be prominent objects, *e.g.* mountains, such that the third can be accurately observed from each of the other two, and they must be easily accessible, so that the instruments can be carried there for new observations. In this way the whole of India has been mapped into triangles and measured. The instruments employed are so delicate, and the observations so carefully made, that the error only amounts to a few inches in many miles. It should be noticed that the two methods of measurement—*triangulation* and the determination of latitude and longitude—can be made to check each other.

22D. REPRESENTATION OF ELEVATION—By the above means we are only able to mark *position* on a map, that is to say, we can put towns in their proper places, and mark the direction of roads, rivers, mountain ranges, boundaries, &c., but they do not help us in showing the irregularities on the earth's surface—the heights of hills, mountains, and plateaux, and the depths of lakes, seas, and oceans. How are these heights and depths measured, and how are they represented on the map?

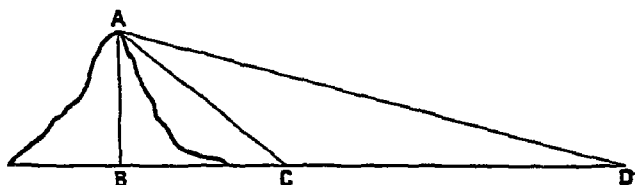
The process of finding the depth of water is called *sounding*, and consists in sinking a heavy weight, generally of lead, and noting the amount of line run out before the weight touches the bottom. The line is marked in *fathoms*. (1 fathom = 6 ft.)

There are several methods of ascertaining heights, the method employed depending upon whether the height to be measured can or cannot be reached.

(1) **By the Thermometer.**—The temperature at which water boils depends upon the pressure of the air upon its surface, and

as the pressure decreases as we ascend, the boiling point of water decreases also. At the level of the sea, water boils at a temperature of 212° F ., at the top of Mont Blanc (15,000 ft.), it boils at

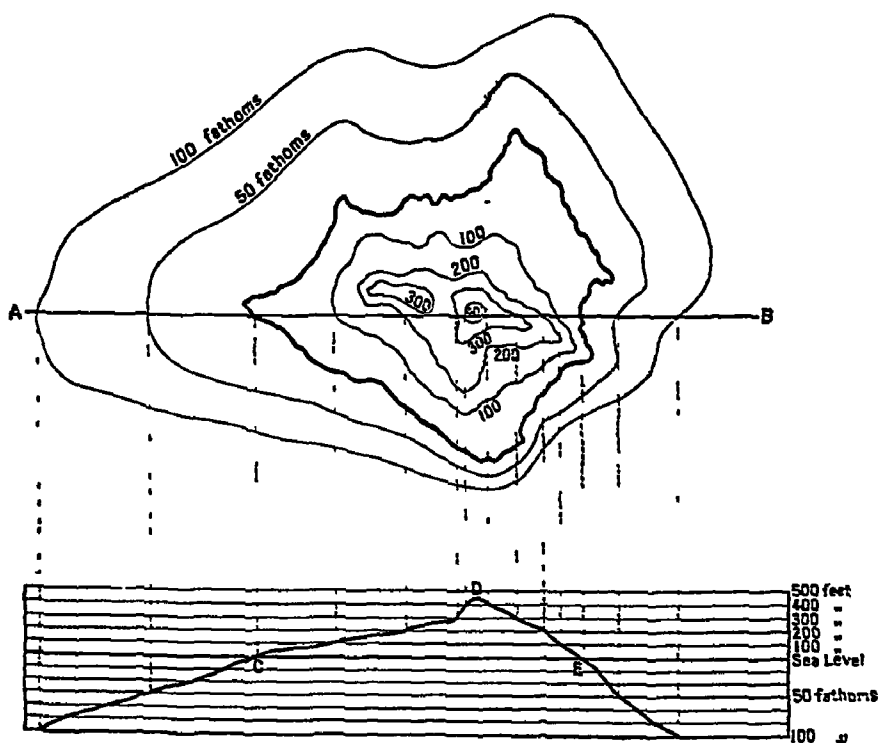
FIG 15i



185°. This is equivalent to a fall of 1° F. for every 550 ft. ascended.

(2) **By the Barometer.**—The use of the barometer in ascertaining heights is referred to on p 53

FIG 15j



(3) By Trigonometrical calculation.—We saw above (Triangulation) that if a side and two angles of a triangle are known the remaining sides and angle can be calculated. Let us apply this method to find the height of an inaccessible mountain A (fig 152).

Measure a base-line CD , and observe the angles ADC and ACD by means of a theodolite. We can now calculate AC . With AC known, the length of AB (the height of the mountain) can be easily found, for the angle ACB can be observed and the angle BAC is its complement.

Heights and depths being measured, it is necessary to devise a method of representing them on the map. In this book this is done by means of different colours. Look at the map of India on p. 99. The high and low portions of the country can be distinguished at a glance; land below 1,000 ft in elevation is coloured green, and land above 1,000 ft. brown. When greater detail is required another method is resorted to, which can best be explained by reference to an example. Fig 15j represents an island, of which the height in various parts has been measured. All the points having an elevation of 100 ft are joined by a line and similarly all the points 200, 300, and 400 ft in height. These lines are called contours, and it is by such lines that elevation is shown on maps in which great detail is required, such as those used by engineers in road and railway construction, and by soldiers in time of war. In the above map a section has been drawn along AB , and the heights projected on to a vertical scale below. The irregular line CDE shows the rise and fall of the road you would take in crossing the island in the direction shown by AB .

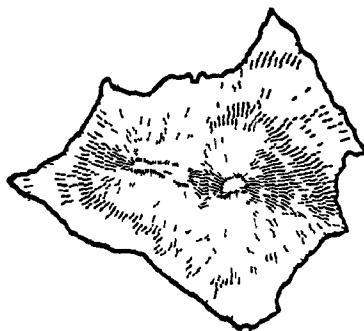
A second method of showing elevation is more usually employed in atlases, and consists in distinguishing heights by degrees of shading, as in fig. 15k.

Where the slope is gentle the shading is light, where it is steep the shading is heavy. The lines of shading are called hachures.

Scale—It is obvious that a map must be drawn very many times smaller than the area to be represented, but the exact ratio between the two is determined by the size of the sheet on which

the map is drawn and the extent of area to be included. If we draw the plan of a house, it would be possible to represent a foot

FIG 15k



of actual measurement by an inch on the plan, and the scale would then be 1 : 12, and would be represented by the fraction $\frac{1}{12}$. In the map of India on page 99, 500 miles are represented by 1 inch. The scale in this map is therefore 1 : 31,680,000. Before drawing a map, the area of the country to be represented and the size of the sheet on which it is to be drawn should be carefully calculated, and a suitable scale decided upon.

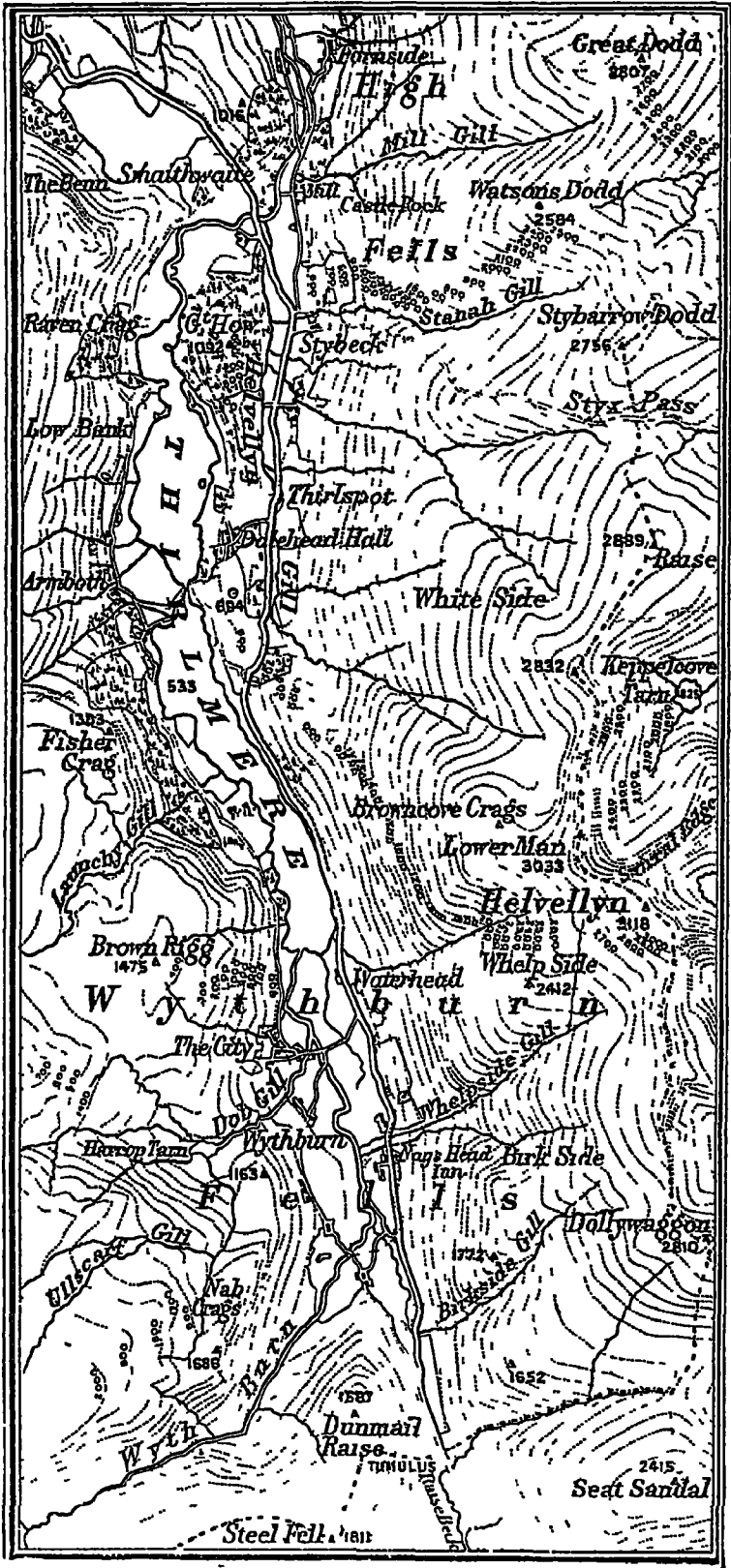
EXAMINATION PAPERS

- A. 1. What is a map? How does it differ from a picture?
 2. By means of measurements, construct a map of your school playground, and insert in their proper places the school buildings. Choose a scale which will enable you to draw the map on a sheet measuring twelve inches each way.
 3. Why is it impossible to represent the Earth's surface accurately on a flat map? What is the method adopted to minimise the inaccuracies?
 4. Describe briefly what you understand by 'triangulation.'
- B. 1. What advantages does the Globular Projection possess over the Stereographic and Orthographic?
 2. For what maps are the Cylindrical and Conical Projections chiefly used? What are the particular advantages of each projection?
 3. By what different methods can the heights of mountains be measured, and how can they be represented?
 4. What is meant by the scale of a map? Given a sheet 12 inches by 10 inches, on what scale would you construct a map of a country 1,000 miles in greatest length and 840 miles in greatest breadth?

MAP READING

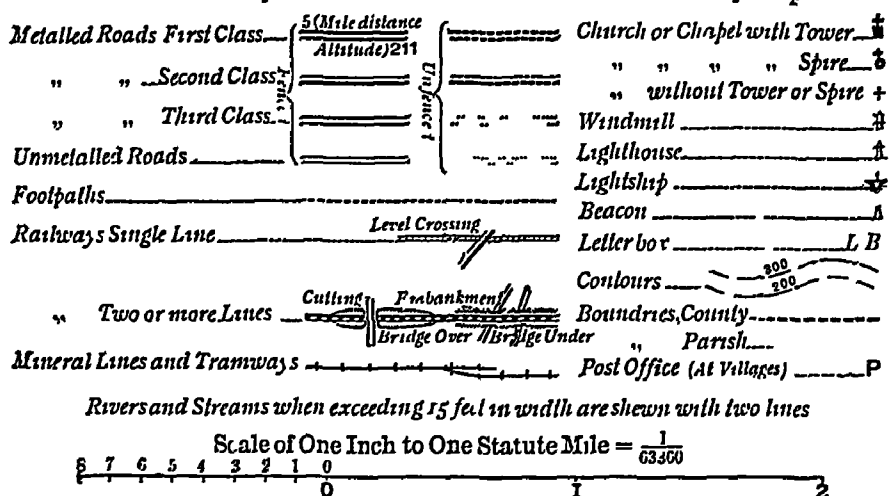
In making maps it has been found necessary to adopt certain conventions that shall be common to all maps to represent certain physical features. It has already been shown that elevation is represented by colour, contour lines and hachures. The depth of the sea is often shown by different shades of blue to represent different depths as measured in fathoms; thus a light blue near the coast enclosed by a blue line may represent a depth of 100 fathoms; a deeper shade and line 600 fathoms, and so on. Rivers are represented by wavy lines. Lakes are shown on coloured maps marked in blue like the sea and simply enclosed by a wavy line on black and white maps. These conventions apply to maps on a very small scale and are found in maps of countries or continents in the ordinary atlas. Maps have been produced, however, on a much larger scale, and the best known of these are the Ordnance Survey maps.

FIG 157—PART OF A ONE-INCH CONTOURED MAP, SHOWING THE LAND
AROUND LAKE THIRLMERE (ENGLAND)



Ordnance Survey Maps—The Ordnance Survey Office issues a series of maps on different scales, such as $\frac{1}{2}$ inch to a mile, 1 inch to a mile; 6 inches to a mile, and in these maps a large number of conventional signs are used. The following show the signs that are used upon a one-inch Ordnance Survey map.

FIG 15m—Symbols used on one-inch Ordnance Survey Map



In studying the map on page 29 the steepness of the land rising from the south end of Lake Thirlmere to the top of Helvellyn should be noted as well as the rapid descent from Lower Man to Keppelcove Tarn. It should be noted that the closer the contour lines are together the steeper is the ascent.

EXAMINATION PAPERS

- A. 1 What part of the world is most distorted in a map upon Mercator's projection?
- 2 Why cannot we use a scale of miles in measuring distance upon a map on Mercator's projection?
- 3 Which projection is most suitable for a country, and why?
- 4 What is meant by Conical projection?
- B 1 In a map of the world on Conical projection the number of miles between parallels of latitude are always the same, but the distance between meridians of longitude varies from the Equator towards the North and South Poles. Explain this.
- 2 What is meant by Triangulation? How is the principle applied to measuring the heights of mountains?
- 3 Upon the Ordnance map on p. 29, show what variations there are in the elevation if a line is drawn from Dunmail Raise to Keppelcove Tarn.
- 4 Show what conventions are used on an Ordnance map to mark a first-class road, a footpath, a church with a tower, a county boundary, a contour, and a lighthouse.

PHYSICAL GEOGRAPHY

23 GENERAL DISTRIBUTION OF LAND AND WATER.

The area of the surface of the earth is about 197,000,000 sq. miles. A little more than one-fourth (52,000,000 sq. miles) consists of land, while a little less than three-fourths (145,000,000 sq. miles) is occupied by water. The highest points of the land are about equal to the deepest parts of the water, but while the average height of the land is only about 1,500 feet, the average depth of the ocean is estimated to be as much as 12,000 feet.

The bulk of the great land masses (about three-fourths) lies north of the Equator, and of this nearly one-half lies within the North Temperate Zone, where the climate is best suited for the development and progress of mankind. The eastern hemisphere also contains a much larger proportion of land (about two and a half times) than the western. It is possible to divide the globe so that nearly all the land (47,000,000 sq. miles) lies in one half, of which England will then occupy the centre, while New Zealand will be situated about the middle of the other half, which contains only 5,000,000 sq. miles of land.

24. Arrangement of the Land.—On referring to the map we see that the land consists of three great masses and a number of smaller ones. The great masses of land are called continents, the smaller ones islands.

There are six great masses which are termed continents, namely:—Europe, Asia, and Africa, forming one large compact mass, known as the Old World; North and South America, forming the second great mass, known as the New World, while the third mass, which is much smaller than either of the others, is called Australia. Probably another great mass, the Antarctic Continent, lies around the South Pole.

The islands vary in size from mere rocks to large masses like New Guinea, which covers an area larger than France.

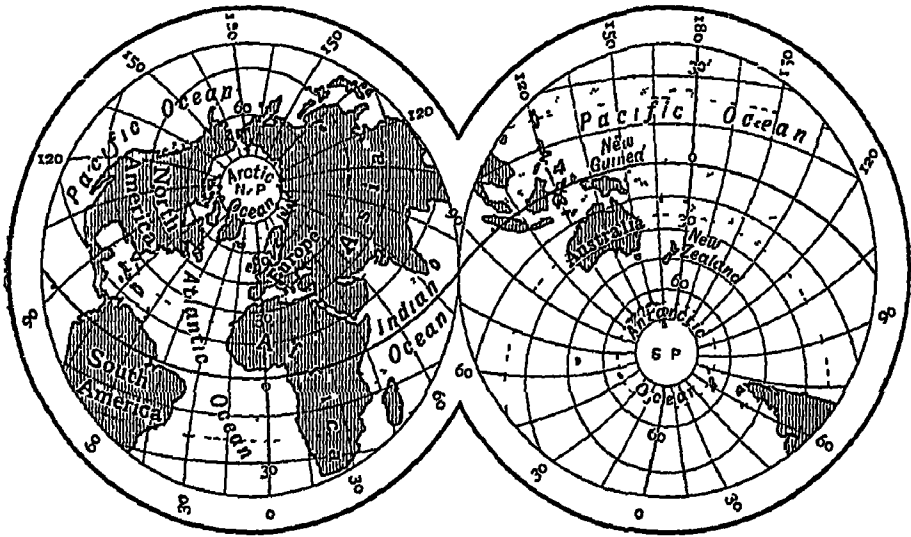
Islands may be divided into two classes. 1. **Oceanic Islands**—These are situated at a great distance from the continental masses of land. They owe their origin either to volcanic action or to the agency of the coral polyp. 2. **Continental Islands**—These lie near the continents, of which they really form a part, and are separated from them by shallow channels.

Where the land and the sea meet is called the shore or coast-line. This line is in many cases very irregular; where it juts out into the sea it forms a cape. Capes are either the harder or more rocky parts of the

32 LONGMANS' GEOGRAPHICAL SERIES FOR INDIA, BK. II

coast which have withstood the action of the waves, or low spits of sand, shingle, &c, which have been deposited at particular places by currents. Strictly speaking, the terms cape, head, headland, promontory, foreland, &c,

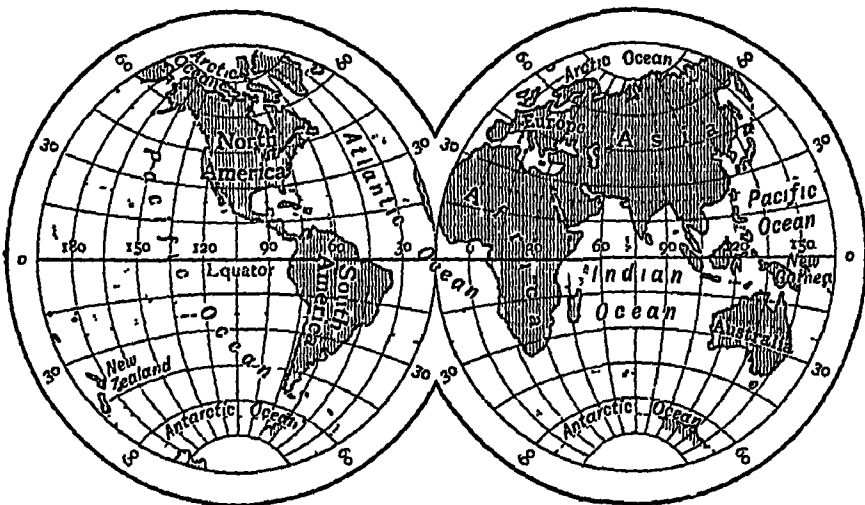
FIG 16—LAND AND WATER HEMISPHERES



are more applicable to the former, while point, naze, and ness (forms of nose) are more frequently applied to the latter

In some cases the water nearly surrounds the land, as in the case of Italy. Such a piece of land is called a peninsula. When the piece of land

FIG 17—WESTERN AND EASTERN HEMISPHERES



which connects a peninsula with the mainland is narrow it is termed an isthmus. The narrow neck of land joining the continents of North and South America is called the Isthmus of Panama.

25 Arrangement of the Water.—The waters of the ocean form one continuous mass, surrounding the land and broken up by it into various parts called oceans.

There are five oceans—the **Pacific Ocean**, between Asia and America; the **Atlantic Ocean**, which separates America from Europe and Africa; the **Indian Ocean**, which washes the shores of Eastern Africa, Southern Asia, and Western Australia, the **Arctic Ocean**, lying within the Arctic Circle; and the **Antarctic Ocean**, which lies within the Antarctic Circle.

Parts of the oceans are called seas. Other openings where the sea flows into the land are known as bays, gulfs, inlets, creeks, &c

As a rule, a bay is a gentle curve, as the Bay of Bengal, while the term 'gulf' is generally used to denote an opening which runs farther into the land, as the Gulf of Cambay. These terms are not at all strictly adhered to, the Gulf of Lions being a wide, open bend, while Hudson's Bay is nearly enclosed by land.

Where a narrow strip of water separates two pieces of land it is called a strait. A wider passage of water is called a channel.

26. RELIEF OF THE EARTH.—The earth's crust is wrinkled or furrowed, some portions have been elevated, while other parts have been depressed. The great elevated masses of the continents are again varied by smaller elevations and depressions, forming plateaux, mountain chains, and valleys. This rising and sinking of the earth's surface is always going on, though so gradually as to be hardly noticeable. These changes are the work of two agencies.—

(1) The contraction of the earth's crust (due to the cooling of the interior) and the action of subterranean forces cause elevation of the land.

(2) The erosive action of wind, frost, rain, &c, gradually breaks up and wears away the land.

The various features of the relief of the land may be divided into two classes—Plains and Mountains. Plains are the stretches of nearly level country, while Mountains are the more abrupt elevations of the land.

27 Plains—When the surface of a plain rises and falls it is said to be rolling or undulating. When situated at a considerable elevation above the sea level the plain is termed a plateau or tableland. When it lies between two elevated portions of land it is a valley. A wet plain is called a swamp, a bog, or a marsh. Near the poles, where the soil freezes, these

swampy plains are known as tundras. Where there is a deficiency of moisture the plain may be a desert.

There are, in addition, a variety of local names given to plains. The great forest plains of the Amazon are called *selvas*, the grassy plains of North America are *prairies* (French=meadows) and *savannas*, those of South America are *llanos* (levels) in the northern part, and *pampas* (plains) in the south, while the treeless plains of Russia and Western Asia are called *steppes*.

28 Mountains either form long ranges or chains running in a definite direction, as the Himalayas, or they lie in groups having no general line of direction, as the Cumbrian Group. Hills, generally speaking are not so high as mountains.

Very narrow hollows cut out by the action of water are called *gorges* or *ravines*.

The most remarkable of these gorges are the *cañons*, which have been cut by the Colorado and its tributaries through a plateau in the western part of the United States. For 300 miles the river flows through a gorge, varying in width from 150 to 500 yards. In the deepest part of the cañon the river is nearly 7,000 feet below the surface of the plateau.

29. **SNOW-LINE.**—The sides of mountains are often clothed with forests to a considerable height; above this grasses and mosses are found, and higher still snow remains throughout the year. The lowest limit at which snow remains throughout the year is called the snow-line.

The height of the snow-line varies with the latitude.

At the Equator the snow-line is about 16,000 feet, on the Alps it is about 9,000 feet, in Lapland it falls to 3,000 feet, while in Spitzbergen it comes nearly to the sea level.

30. **CAVERNS, STALACTITES, AND STALAGMITES** — In districts where limestone rocks abound caves are frequently found among the hills. Water which contains carbonic acid readily dissolves limestone. When this water drains through these rocks great hollows or caverns are formed, through which even rivers sometimes flow. The Mammoth Cave of Kentucky reaches underground for a distance of nine miles.

Limestone caverns are also remarkable for the formations known as stalactites and stalagmites. As the water trickles through the roof, some of it evaporates, a little of the limestone which it has dissolved is deposited, and in time masses hanging from the roof of the cavern are formed. These are called stalactites. As some of the water falls on the floor this also evaporates, and a deposit is formed, which gradually rises from the floor.

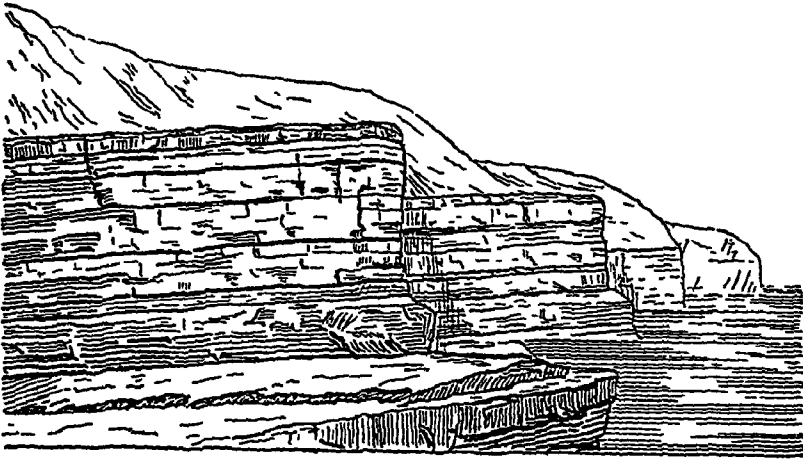
and which is known as a stalagmite. In time these two masses may meet, and a continuous column is then formed.

31. THE EARTH'S CRUST.—This means the outside portion, which has cooled and hardened. It is composed of minerals, which form the masses called rocks. The term rock, when used in a geological sense, means all kinds of natural stone, whether soft or hard, and thus sand and clay are regarded as rocks as much as limestone or granite.

CLASSES OF ROCKS.—Rocks form two great natural divisions—Stratified and Unstratified.

Stratified rocks lie in layers or strata (fig 18). These layers may be seen on the sides of a railway cutting or in a quarry. The presence of rounded

FIG 18 —STRATIFIED ROCKS.



pebbles, remains of shells, corals, and aquatic animals (fossils) found in these rocks furnish evidence that they must have been originally formed under water.

32 Formation of Stratified Rocks.—As a stream of water flows along, it carries with it sand, mud, and substances which it has dissolved during its passage. When it enters the sea or a lake its current is checked, and the sediment is deposited in layers, just as may be seen on the land after a flood. The sand being the heaviest settles first, and forms in course of time sandstone. The mud being in smaller particles is carried farther out to sea, and when deposited forms beds of mud, which when hardened is called shale. The soluble matter is carried still farther out, and is used by fishes and corals to form their bones, shells, &c. When they die the bony remains form beds of limestone. *Sandstone, clay (when hardened called shale), limestone, chalk, coral, gypsum, rock-salt, peat, and coal* are common examples of stratified rocks.

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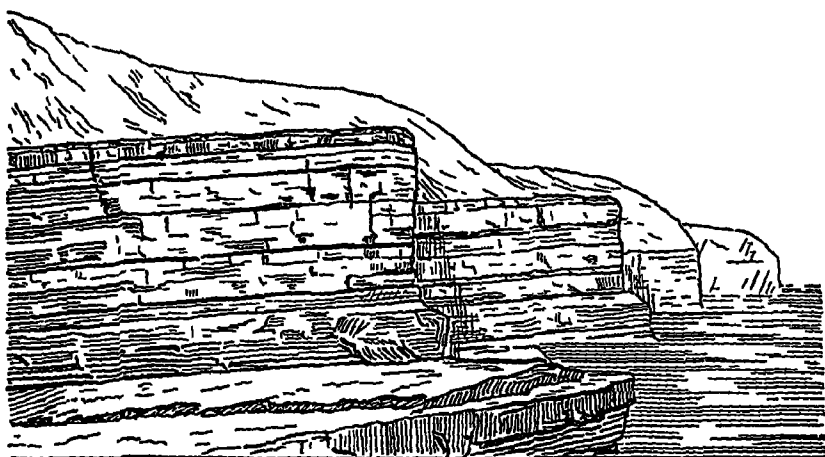
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33 Unstratified Rocks, as their name suggests, do not show traces of beds or layers, and contain no fossils. They have been produced by the action of heat, and are generally glassy or crystalline in appearance. Some have been ejected from volcanoes, as *lavas* and *volcanic ashes*, while others have cooled and solidified under great pressure beneath the surface, such as *granites* of various kinds.

34 A third class of rocks, called *Metamorphic Rocks*, are found in layers like stratified rocks, and are more or less crystalline in appearance, like unstratified rocks. They are stratified rocks altered by heat, pressure, or chemical action into a crystalline structure. Familiar examples are *marble*, which is crystallised limestone, *quartzite*, or crystallised sandstone, and *slate*, which is hardened shale.

35 **SOIL**—This is the most important part of the earth's crust so far as mankind is concerned. It is the upper part of the crust in which vegeta-

tion grows, and it is formed by the gradual breaking up of the rocks. This breaking up is caused by atmospheric changes (such as rain, frost, change of temperature), the action of the roots of plants, and the operations of animals that live in the ground. Changes of temperature cause the rocks to crack, water finds its way in, and by dissolving the soluble matter causes the remainder to crumble. This crumbling is aided by the action of frost. Water sinks into the ground,

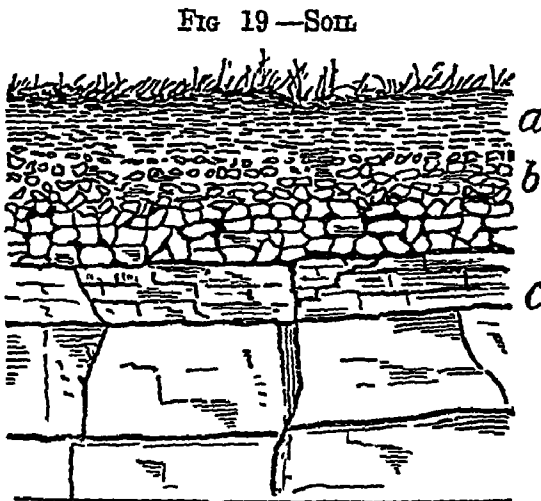


Fig 19 shows the gradual breaking up of the rocks to form soil. c shows the blocks of stone, b the larger blocks broken up forming the subsoil, a the stones crumbled into soil.

freezes, expands, and thus breaks up the rock. Soil is thinnest on hill sides, as the rain washes it away, and thickest in the plains or valleys.

36 **CHANGES IN THE EARTH'S CRUST.**—The changes which are constantly taking place on the earth's surface are chiefly due to the action of winds, frost, rain, rivers, the waves of the sea, tides, currents, and the internal heat of the earth.

Action of Winds—Winds carry the sand from the sea coast and sandy plains, forming sand-hills, thus turning fertile land into a desert. The 'Landes' in France and large sandy tracts of land on the coast of Belgium have been formed in this manner.

The sharp particles of sand, when driven by winds against rocks, wear away their surface in a remarkable manner, as shown in fig. 20.

FIG 20.—ACTION OF WIND UPON ROCKS.



The Action of Frost has already been mentioned.

87. Action of Rain.—Rain loosens and carries away the soil to other places, and also dissolves many of the substances contained in the earth's crust. Some of the rain which falls upon the earth sinks into the ground and forms springs; that which runs off the surface helps to form rivers.

SPRINGS.—When rain falls upon an open permeable rock, such as sand or gravel, it sinks in, and the lower portion of the rock becomes saturated. When this sand or gravel rests upon an impermeable rock, such as clay, granite, &c, the water passes along the surface of the clay, and oozes out at *s* as a surface spring

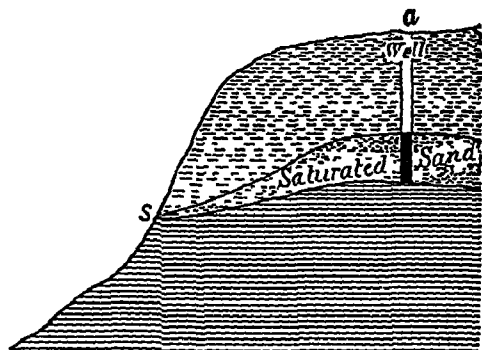
If a well be dug, as at *a* (fig 21), the water will rise in the well to the level of the saturated portion of the gravel

When the strata are inclined, as in fig 22, the water will cease to flow at *s* when the

level of saturation falls below the line *s s* Such a spring is intermittent, and during dry weather may cease to flow.

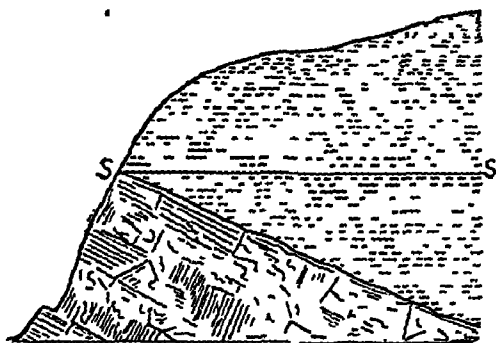
When the permeable bed of rock (*a*, fig 23) lies between two beds of impermeable rock (*b b*) so as to form a hollow as shown in the figure, the permeable bed *a* will become saturated from the rain which falls on the

FIG 21 —A SURFACE SPRING



surface at A, where it is exposed. If a hole be now bored through *b* to the porous rock, the water will rise up to the surface at B. Such an artificial

FIG 22.—AN INTERMITTENT SPRING.

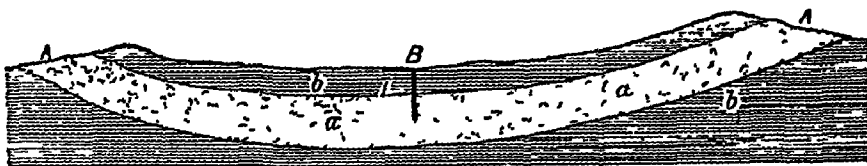


spring is called an Artesian Well. Quetta is supplied with water by boring through the clay until the porous water-holding bed is reached.

38 Thermal and Mineral Springs.—When springs crop up from a great depth they are heated, and are then known as thermal springs. New Zealand is remarkable for its hot springs. The natives often

select the sites of their huts near springs where the water is sufficiently hot to be used for cooking purposes.

FIG 23 —AN ARTESIAN WELL



In passing through the rocks springs frequently take up large quantities of soluble mineral matter. Some contain large quantities of salt, others contain carbonate of lime, oxide of iron, &c. These are called mineral springs.

Many of these springs contain salts which are useful as medicines, such as the springs at Bath, Harrogate, and Cheltenham, in England.

39 RIVERS.—Where a river takes its rise is called its source, and where it ends is its mouth. The source of a river may be a spring, or it may originate in the melting of the mountain snows and glaciers, or the river may be the outlet of a lake. Its mouth may be a wide estuary, scoured out by the tide like the Amazon, or it may find its way to the sea through a network of channels, forming a delta, like the Ganges.

The sources of a river are fed by the rains; these tiny streams unite and form a larger stream, which receives fresh feeders, or tributaries, as it flows on to the sea. There evaporation is constantly causing the vapour to rise in the air and form clouds. These are again condensed by contact with cold moun-

tain tops, cold winds, &c, and fall as rain, thus keeping up a continuous circulation.

Drainage—The area drained by a river is its basin. The more elevated land lying between one river basin and another is the **water-parting**, while the slope down which the river flows is sometimes called the **watershed**.

40 Erosive Action of Rivers—Rivers produce changes on the land in two ways —

1 By wearing away the surface they form valleys

2 They carry away the sediment to other places and form fresh deposits, as shallows, sand-banks, and bars

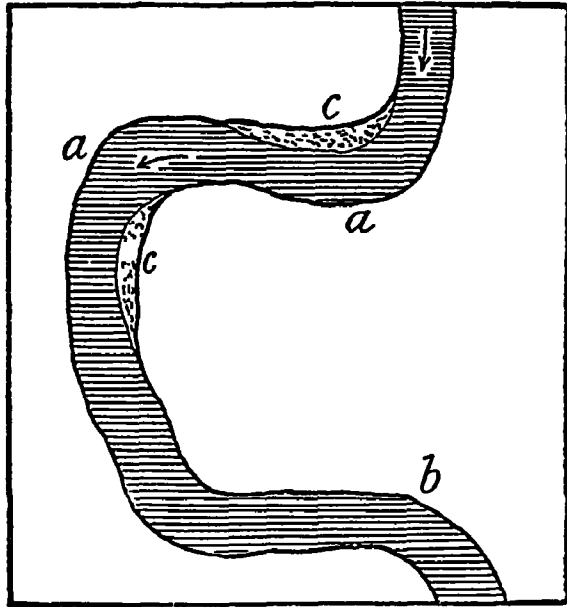
When a river flows over a rocky ledge a waterfall, cataract, or cascade is formed. Where the slope of its bed is increased or where its channel is obstructed by rocks a rapid is the result.

A river eats its bed out of the land most in the *upper part* of its course, where the slope is steepest. In the *middle part* it deposits at about the same rate as it erodes, and in the *lower part* it deposits more than it erodes.

Alterations in the channels of rivers are frequently caused in the following manner—The banks are worn away, and the water is deepest at *a* (fig 24), where the force of the current is strongest, while at *c*

shallows will be formed by the deposit. This may be observed in the course of any brook flowing through level country. In course of time the bank becomes so worn at *a* that a flood may cause a new channel to be formed between *a* and *b*. The Mississippi, Hwang-ho, and Volga frequently form new channels in this manner. In some cases towns once important have decayed because the alteration of the river channel has diverted the trade from them.

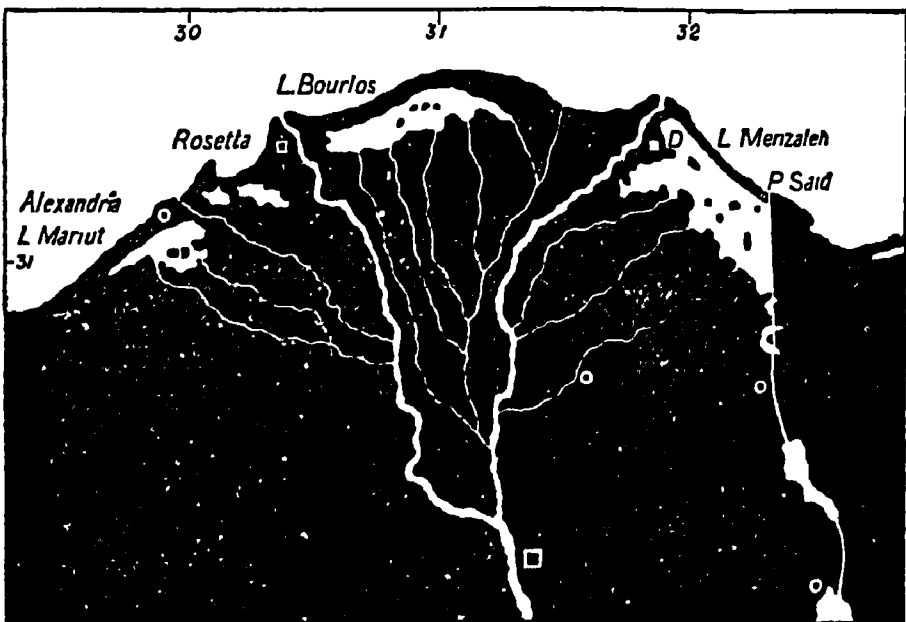
FIG 24 —A RIVER CHANNEL



41. DELTAS.—Rivers carry a great deal of sediment to the sea. If strong currents or tides flow past the river mouth this

sediment is carried farther away, but when the river flows into a lake or a comparatively tideless sea, like the Mediterranean, its flow is checked, and the deposit of sediment accumulates at the mouth, gradually filling up the estuary. As these deposits rise above the surface, the river forces its way to the sea by several mouths, while every flood, by depositing fresh matter, raises the beds of sediment higher above the surface of the water. Such a formation is called a delta, from a fancied resemblance to the Greek letter Δ , the Greeks first applying this name to the delta of the Nile, with which they were best acquainted. A delta begins

FIG. 25 —THE DELTA OF THE NILE.



where the river originally met the sea. This point is the head of the delta. For example, in fig. 25, Cairo is at the head, and Rosetta and Damietta are at the other angles of the triangle.

An enormous quantity of mud is brought down by rivers. The head of the delta of the Ganges is 220 miles from the sea. The Mississippi is pushing its deposits into the Gulf of Mexico at the rate of 330 feet annually, while the mud brought down by the Amazon discolours the sea for a distance of 300 miles from the land.

Rivers not only deposit at their mouths, but in the lower part of their courses are constantly filling up their beds, so that in many cases artificial banks are needed to preserve the land from inundation. In other cases the channel is only kept open by constant diedging.

The Rhine and Po, as they near the sea, are considerably above the level of the country through which they flow

Most of the rivers of the Indian Empire form deltas at their mouths

42. LAKES are bodies of water occupying hollows in the land. They may owe their origin to three sources:—

1. Where the ocean floor has been upheaved, the shallow parts become dry land, while the deeper portions form lakes. Such are the Caspian Sea and the Sea of Aral.

2. They may be the accumulations of water in natural hollows, fed by the drainage of the surrounding district, like the vast lakes of Central Africa.

3. They may be mere expansions of a river channel, such as the lakes through which the Shannon flows.

Sometimes a deposit is formed near the coast, especially where it is low and flat, which shuts off large tracts of shallow water from the sea, forming a lagoon.

Lakes may be classed as salt or fresh. As a rule, those lakes which have rivers flowing through and out of them are fresh; the salts which the river has dissolved in its passage through the soil being carried out of the lake. Where the lake has no outlet it is generally salt.

43. GLACIERS.—In districts above the snow-line, where the snow accumulates, the great pressure of the upper layers squeezes the crystals of the lower layers so closely together that a compact mass of ice is formed. The heat of the summer sun assists the process by melting the surface snow, and thus charging the mass underneath with water, which freezes at night. Each winter brings fresh snow, which is in turn converted into ice. The enormous pressure from the snow-fields behind and the force of gravity cause the mass to move slowly down the valley, thus forming a glacier, or ice-river. The glacier extends down the valley until the heat causes the lower portion to melt. It terminates generally in a rough archway of dirty ice, from which flows a muddy stream of discoloured water.

Motion of Glaciers.—Like a river, the rate of motion of a glacier is fastest where there is least friction. A glacier moves quicker in summer than in the winter, and more rapidly at the middle and top than at the sides and bottom.

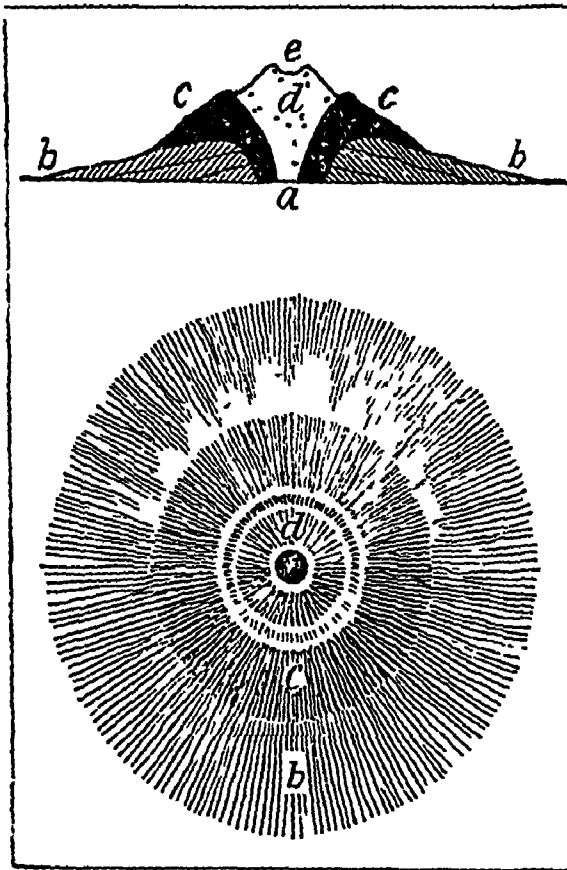
Moraines—As a glacier moves forward, rocks and stones loosened by the frosts of winter, &c., are deposited on its sides, carried down the valley.

and finally deposited at the end of the glacier. These masses of *débris* are called moraines

Action of Glaciers on Rocks.—As the glacier creeps slowly down the valley, the enormous weight of the solid ice grinds off the projections and smooths down the rocks over which it passes. The underlying rocks are grooved and scratched by the stones which are imbedded in the under surface of the glacier. These glacier-markings are plainly seen in the lower Swiss valleys where the glaciers have retreated. Here the worn and rounded rocks show unmistakable evidence of glacial action

14. ICEBERGS.—Near the poles, where the snow-line extends to the sea level, enormous glaciers reach for a considerable distance into the sea. The action of waves and currents undermines and breaks off huge masses of ice, which are carried by currents into warmer latitudes. Here these icebergs melt, and

FIG 26 — A VOLCANO



deposit their boulders and soil, forming banks like those of Newfoundland.

45. VOLCANOES.

It has already been explained that the interior of the earth is intensely hot. It is also probable that it contains reservoirs of molten matter, which communicate by openings or pipes with the earth's surface. If anything occurs to block up the opening, or when water finds its way to these heated masses, so much steam is generated that it forces its way up the pipe, clearing it from

débris, and carrying volcanic dust and ashes high into the air. This action is generally followed by a stream of melted rock,

called lava, which overflows from the pipe, or sometimes forces its way through a new opening, forming a new cone.

A volcano, then, is formed of the matter which has been forced up from the interior of the earth through an opening in its crust. An ideal volcano is represented in plan and elevation in fig 26. *a* is the pipe, *b* is the consolidated volcanic ash, *c* is the solidified lava, *d* consists of ashes and scoræ which have filled up the pipe after an eruption, and *e* is the crater.

As the matter forced up during an eruption falls round about the pipe, it follows that volcanoes are more or less conical in shape.

When the volcano is not in eruption, the pipe is closed, or nearly so, at the top, so that a cup-like basin is formed, called the crater.

Where no eruption has ever been recorded the volcano is said to be extinct. In France, among the Auvergne Mountains, many of the hills still show by their form their volcanic origin. Where no eruption has been recorded in modern times, the volcano is said to be dormant. Such a volcano may become active at any time.

46 Distribution of Volcanoes — There are more than 300 active volcanoes on the earth's surface; over 200 of these are on the shores of the Pacific and Indian Oceans. The chief lines of volcanic action are —

1 From Cape Horn along the west of America, and by the Aleutian Islands to the east of Asia, reaching to Mount Erebus in the Antarctic Continent, thus bordering the Pacific Ocean.

2 From Jan Mayen in the Arctic Ocean, through Iceland and on by the Giant's Causeway in Ireland through the Azores and Cape Verde Islands to the Gulf of Guinea, with branches to the West Indies and the Mediterranean.

47. GEYSERS are hot springs, liable to eruption at regular intervals. Some discharge water every few minutes, others daily, or at longer intervals. The eruptions are due to similar causes to those which affect volcanoes.

The principal centres are —

1 Iceland, where there are about 100 springs situated in the neighbourhood of Mount Hekla. The chief of these, the Great Geyser, sends up at intervals a column of water 100 feet high and 10 feet thick.

2 The North Island of New Zealand, which contains hot springs and geysers of great magnitude.

3 The Yellowstone Park, in the Rocky Mountains, which contains a large number of vents, from the chief of which a column of water is discharged to the height of 200 feet.

48. EARTHQUAKES are movements of the earth's crust. They are closely connected with volcanoes, as is shown by the facts that earthquake shocks frequently accompany volcanic erup-

tions, and that the most destructive earthquakes have occurred in volcanic districts. They may be caused by the breaking of the strata under the strain of the contraction caused by the cooling of the earth's crust, by the sudden generation and expansion of steam, or they may be due to the actual sinking of portions of the crust.

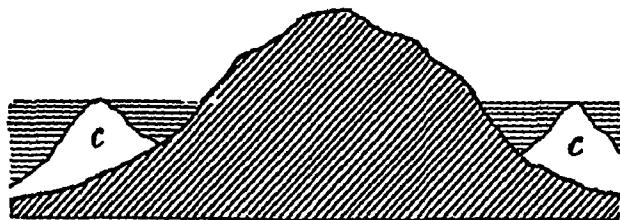
Where Prevalent—Earthquakes are most common in volcanic districts. In the Old World, the district extending from the Azores through the Mediterranean, Asia Minor, the great tableland of Asia, to Japan suffers most; while, in the New World, the line of the Andes is the part where their action has been most destructive

It is when earthquakes originate under the sea near the coast that their effects are most disastrous. Huge waves are then formed, which extend to a great distance, the sea withdraws and returns upon the land, sweeping everything before it. At the Lisbon earthquake in 1755 the enormous loss of life was largely due to the waves washing over the land. A similar disaster occurred (January 1907) at Kingston, Jamaica.

49. CORAL ISLANDS owe their formation to the agency of the coral polyp. This little creature secretes the carbonate of lime which is present in solution in the sea-water, and deposits it around its body as a tube of coral. It multiplies in various ways, forming a branching mass of coral rock which spreads outwards and upwards until the surface is reached. The waves help to carry on the work by breaking off pieces of coral, raising them above the surface, and pounding them into sand until a solid compact mass is formed. The island then becomes the resting-place of sea birds, drifting vegetable matter is stranded there, vegetation springs up, fresh soil is formed by its decay, and the island ultimately becomes covered with verdure.

The polyp cannot exist above the surface of the water, nor at a greater depth than about 100 feet. The water must be clear and have a tempera-

FIG 27 —FRINGING REEFS



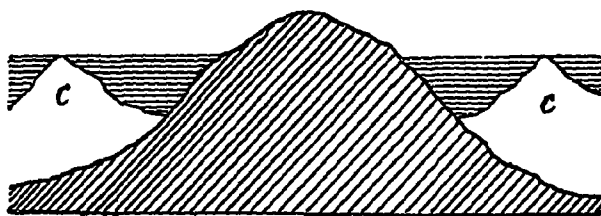
ture of not less than 68° F, hence coral reefs are limited to warm latitudes. Coral reefs are divided into three classes —

1. **Fringing Reefs**, which are formed close to the shore
2. **Barrier Reefs**, formed at a greater distance.
3. **Atolls**, which consist of circular rings enclosing a lagoon of shallow water.

According to Darwin, Dana, and others, all atolls began as fringing reefs close to the shore, as in fig 27

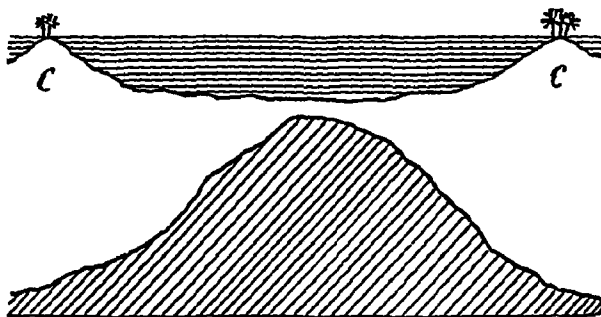
In fig 28 the island has gradually subsided, while the reef continues to be built up to the surface, leaving a wider space between the reef and the island

FIG 28 — BARRIER REEFS



The continued subsidence (fig 29) ultimately causes the island to disappear, leaving only a ring-shaped atoll

FIG 29 — ATOLL



According to Mr Murray, of the 'Challenger' Expedition, atolls are formed on the tops of submarine volcanoes, which rise near enough to the surface for the coral polyp to build upon

EXAMINATION PAPERS

- A. 1 What is meant by the terms 'Old World' and 'New World,' and what are oceanic and continental islands?
- 2 Describe an imaginary journey along a sea coast, explaining the various physical features that might be seen
3. What is meant by the 'relief' of the earth?
4. Explain the terms 'tundras,' 'selvas,' 'llanos,' 'pampas,' 'steppes,' 'cañon,' and state in what parts of the world the features denoted by these terms are used.

- B. 1 What is the snow-line, and what circumstances affect its height?
 2 How are limestone caverns formed, and what formations are found in them?
 3 What is a rock, and how are rocks classified?
 4 Explain how stratified rocks are formed
- C. 1. Explain the action of water and frost in forming soil.
 2 How are springs formed? What is an intermittent spring?
 3 Describe an artesian well
 4 What are thermal springs, and from whence do they derive their heat?
- D. 1. What are estuaries, affluents, bars, cataclasts, cascades?
 2. Explain how a delta may be formed Why are deltas formed by the rivers of India?
 3 How do lakes originate? Distinguish between salt- and fresh-water lakes.
 4 How are glaciers formed?
- E. 1. Describe the motion of a glacier, and explain its action upon the rocks over which it passes
 2 Where are icebergs formed? Account for their presence near Newfoundland
 3 What is a volcano? Draw a diagram illustrating its formation
 4 Where are the principal lines of volcanic action?
- F. 1 Define the following: 'crater,' 'lava,' 'geysers,' 'dormant volcano'
 2 Give reasons for supposing that earthquakes and volcanoes are allied phenomena.
 3 Explain how a coral reef becomes fitted for the abode of man
 4 How does Darwin explain the formation of an atoll?

THE OCEAN

50. If sea-water be tasted it will be found to possess a disagreeable flavour, partly bitter and partly salt. This is due to the presence of certain mineral substances known as salts, which are dissolved in the water. Of these salts, common salt is by far the most important. In 100 lbs. of sea-water there are about $3\frac{1}{2}$ lbs. of saline substances, of which $2\frac{3}{4}$ lbs. consist of common salt.

The degree of saltiness varies in different parts of the ocean. Near the Equator the evaporation is greater than towards the poles, consequently the waters of tropical seas are saltier than those of the polar regions. Again, in seas like the Mediterranean, Red Sea, Gulf of Mexico, &c, where the evaporation exceeds the supply of fresh water brought by the rivers, the water is saltier than that of seas like the Baltic, Hudson's Bay, &c, where the supply brought by the rivers exceeds the loss due to evaporation.

51. Temperature of the Ocean.—The temperature of the ocean is much more uniform than the temperature of the land. This is due to two causes —

1. Water is not heated by the sun so readily as the land, and when heated it takes a much longer time to cool.

2. The waters of the ocean are constantly circulating, the warm waters from the tropical regions flowing towards the poles and the colder water from the polar regions flowing towards the Equator, thus tending to create uniformity of temperature.

At the surface the temperature of the water varies according to the latitude and the seasons. Near the Equator the average surface temperature is about 80° F, this diminishes as we approach the poles, where in winter it falls as low as 28° F.

Below the surface, however, the temperature is much more uniform, and in the deeper parts of the open sea the average temperature is nearly constant, temperatures taken at great depths in Arctic regions differ very little from those taken at similar depths near the Equator.

52. MOVEMENTS OF THE OCEAN.—The waters of the ocean are constantly moving. The ridges formed on the surface by the winds are called waves; the flow of water from one part of the ocean to another forms currents, while the alternate rising and falling of the water are called tides.

53. WAVES are caused by the friction of the wind on the surface of the water. It is only when waves approach the shore that the water really advances; the bottom part of the wave is retarded by contact with the rocks and sand, and the crest rolls forward and breaks as surf.

In a gale the waves strike the coast with great force, breaking off pieces of rock and dashing them one against the other until they are broken up and finally pounded into sand. The wearing away of the coast is aided by the action of the waves in dashing the boulders against the foot of the cliffs, grinding away the lower part until the overhanging portion falls. In very great storms the waves sometimes rise to the height of 40 feet. On exposed coasts like the West of Ireland and Scotland the rocks are worn and eaten away in a very irregular fashion, causing the coast-line to be very broken in outline.

54 CURRENTS.—In equatorial regions the great heat of the sun produces two important results.

1. The water in these regions is expanded and made lighter than the colder water towards the poles. Its level being slightly

raised by the expansion, the tendency will be for the warmer water to flow as a surface current towards the poles.

2. An enormous amount of water is being constantly converted into vapour. To replace the losses due to evaporation and the surface flow towards the poles, a constant flow of the colder and heavier water from the polar regions sets in as an under-current towards the Equator.

55. We have thus a continuous circulation of water between the equatorial and the polar regions. This circulation is greatly modified by the following influences :—

I. The Direction of the Prevalent Winds.—In the case of the chief surface currents the winds are undoubtedly most powerful agents. In the region of the trade-winds, which blow constantly towards the north-west and south-west, there are, in both the Atlantic and Pacific Oceans, great equatorial currents flowing towards the west. The Gulf Stream Drift is swept towards the shores of Western Europe by the prevailing south-west winds. The currents of the Indian Ocean are in like manner chiefly governed by the monsoons.

II. The Rotation of the Earth on its Axis.—In accordance with what is known as Ferrel's law, *the effect of the earth's rotation upon bodies moving on its surface is to deflect them to the right when in the northern hemisphere, and to the left when in the southern hemisphere.* We therefore find the North Equatorial Current of the Atlantic turned to the right as the Gulf Stream, and the South Equatorial Current turned to the left as the Brazilian Current. In the Pacific and Indian Oceans a similar deflection takes place.

III. The Configuration of the Land —If there were no land masses near the Equator there would be a continuous westerly current all round the earth. This westerly flow is interrupted by the coast of Brazil in the Atlantic, by the East Indian Islands in the Pacific, and by the east coast of Africa in the Indian Ocean. These masses of land deflect the equatorial currents to the north and south, thus sending to colder regions some of the heat of the 'Torrid Zone.

56 Influence of Currents on Climate —As has already been pointed out, the great equatorial currents are deflected north and south, carrying the



FIG. 80—OCEAN CURRENTS.

Longmans & Co. London, New York, & Bombay.

Wolsey & Bonhill.

heat from the tropics into colder regions. An exactly opposite effect is produced by the currents from the Arctic and Antarctic Seas, the cold waters from these regions tend to lower the temperature of the districts towards which they flow.

The most striking example of this influence of currents on climate is to be seen in the Atlantic. The harbours of Northern Norway, owing to the influence of the Gulf Stream, are free from ice all the year through, while those of the Baltic and Black Seas, much farther south but removed from its influence, are frozen over in winter. On the American side, the cold current from the Arctic Ocean keeps the coast of Labrador, which is in the same latitude as England, blocked with ice for nine months of the year, and in New York (latitude 40° N), the temperature of the water in winter is as cold as that near the North Cape, which is 31° farther north.

Where cold and warm currents meet, dense fogs are common, as for example off the great Bank of Newfoundland, where the cold Arctic Current meets the warmer waters of the Gulf Stream.

Violent storms are caused by differences in temperature due to the meeting of cold and warm currents. The hurricanes which occur off the east coast of the United States follow the line where the Gulf Stream meets the Arctic Current. The Typhoons of the Pacific follow the course of the Japan Current.

The continuous circulation of the waters of the ocean keeps them pure and free from the ill effects of stagnation.

57 Influence of Currents on Commerce—Harbours are kept free from ice by warm currents, thus permitting trade to be carried on throughout the year. The routes of ships are frequently selected with a view of taking advantage of favourable currents, and of avoiding unfavourable ones.

The most important food-fishes are found in cold waters, hence where cold surface currents flow towards the Equator, fish are found much nearer to tropical districts than they otherwise would be. The great fishing grounds off Newfoundland and the north of Japan illustrate this fact, the cold currents from the north bringing swarms of fish to these regions.

58. Currents of the Atlantic.—Part of the great flow of cold water from the Antarctic Ocean passes northward along the western shores of Africa, the rotation of the earth and the influence of the south-east trade-wind turn it westwards, where it loses itself in the South Equatorial Current. This current divides at Cape St. Roque into two branches, one of which is turned towards the south as the Brazilian Current, which ultimately turns towards the east and mingles with the cold Antarctic Current.

The other and more important branch enters the Caribbean Sea, passes round Cuba, just enters the Gulf of Mexico, and passes through Florida Strait as the famous Gulf Stream. It is here a rapid current of dark-blue warm water, about forty miles wide, over

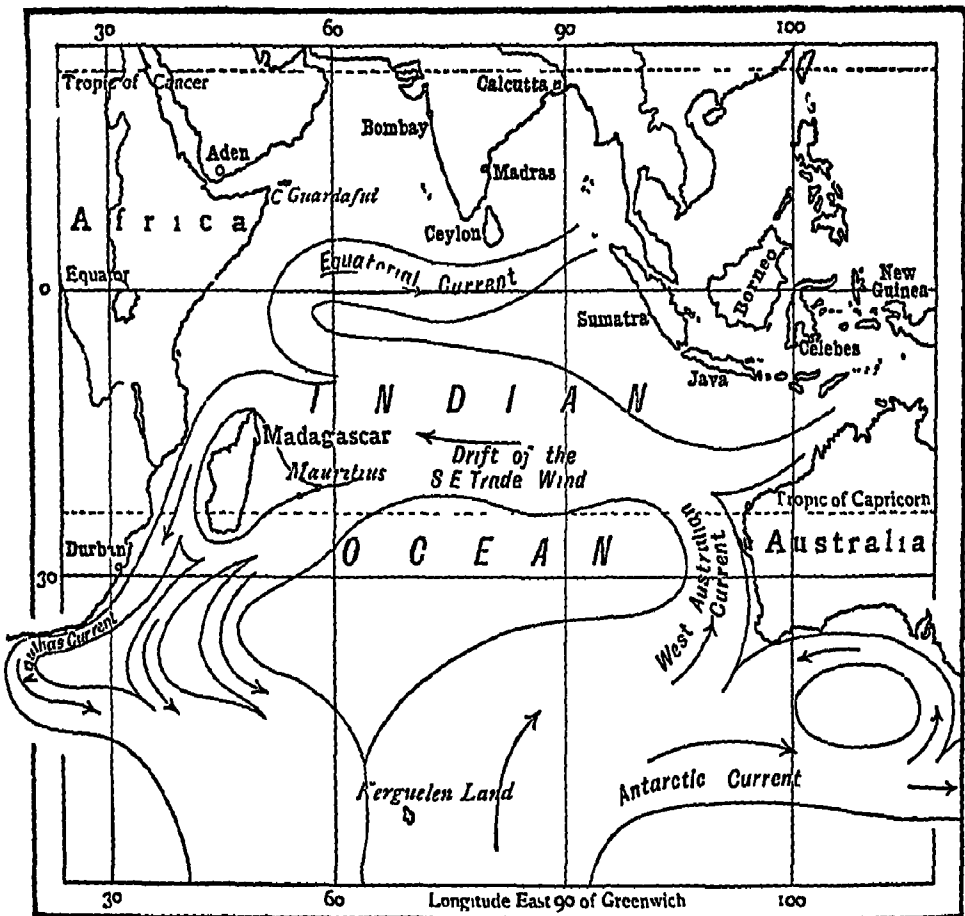
8,000 feet deep, flowing at the rate of five miles an hour in the middle part of its course, and having a surface temperature of 85° F. On leaving the strait it is joined by the **North Equatorial Current**, and the whole stream flows in a north-easterly direction across the Atlantic, gradually spreading out and decreasing in its velocity. When about half way across the Atlantic, where the current is about 800 miles in width, it divides into two branches, one turns south, and after flowing by the shores of Portugal and North-western Africa, rejoins the **North Equatorial Current**, enclosing within its whirl a great mass of seaweed and drift-wood known as the **Sargasso Sea**. The other portion of the stream is driven by the prevailing south-west winds to the shores of the British Isles and North-western Europe, throwing off a branch which keeps the harbour of **Reikjavik** open, when the neighbouring shores of Greenland are blocked with ice, and which at last mingles its waters with those of the Arctic Ocean.

A cold current, from the Arctic seas, flows south by Greenland, and, after joining the **Labrador Current** from **Baffin's Bay**, passes along the American coast until it meets the **Gulf Stream**. Here part of its colder and denser waters flows under the **Gulf Stream**, carrying icebergs a considerable distance southward before they are melted, the other portion continues along the eastern shores of the United States, where its cold green waters can be easily distinguished from the deep-blue waters of the **Gulf Stream**. The line of parting between the two currents is so marked that it is called the **Cold Wall**.

59. Currents of the Pacific.—The circulation in the Pacific closely resembles that of the Atlantic. The cold **Antarctic Current** flows northward along the western shores of South America under the name of the **Peruvian** or **Humboldt Current**. On nearing the Equator it is turned west and becomes merged in the **South Equatorial Current**, which sweeps for 8,000 miles across the Pacific; part is deflected south by the coast of Australia as the **New South Wales Current**, and ultimately mingles again with the Antarctic Drift, while a small portion finds its way into the Indian Ocean. The **North Equatorial Current** on reaching the east of Asia is turned north, and forms the **Kuro Siwa** (**Black Stream**), or **Japan Current**. This current is probably larger than the **Gulf Stream**, which it resembles in

many respects, but its waters, not being so confined, do not attain so great a velocity. After flowing by the shores of Japan it meets the cold currents from the Sea of Okhotsk and Behring Strait. It divides here, and the principal branch, after flowing along the shores of Alaska and the west of North America, returns to the North Equatorial Current, enclosing a Sargasso Sea, but of much smaller magnitude than that of the Atlantic.

FIG 81—INDIAN OCEAN CURRENTS



Walker & Boutall sc.

60 Currents of the Indian Ocean.—In the northern part of the Indian Ocean the currents are governed by the Monsoons. In the southern part a branch of the Antarctic Current flows northward along the shores of Australia as the **West Australian Current**, this is turned west by the south-east trade-wind, and on reaching Madagascar divides—one branch turns south, and rejoins the Antarctic Current, while the other flows north of Madagascar, through the Mozambique Channel, and

along the south coast of Africa, as the Agulhas Current. It now turns south, and carries its warm waters to the Antarctic Ocean.

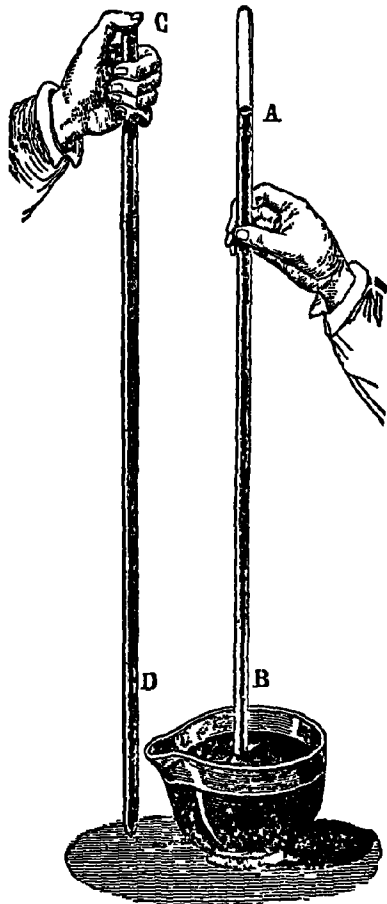
61 Local Currents—These are entirely independent of the great oceanic circulation. Seas like the Mediterranean and Red Sea, which lose more water by evaporation than is supplied by the rivers, have strong currents flowing into them, while the Baltic Sea, Black Sea, Hudson's Bay, &c, have currents flowing out of them, because the supply of fresh water from the rivers exceeds the loss by evaporation.

THE ATMOSPHERE

62. The air which surrounds the globe on all sides is a mixture consisting chiefly of two gases, oxygen and nitrogen. In 100 volumes of air the proportion is about 21 of oxygen to 79 of nitrogen, with small traces of other gases, of which carbonic acid is the chief. In addition to these gases watery vapour is always present.

PRESSURE OF THE ATMOSPHERE.—As we ascend into the air it becomes thinner, and the pressure is diminished. The air nearest to the earth's surface is the densest, because it is more strongly attracted by the earth, and because it has the weight of the air above pressing upon it. At the sea level the air presses upon every square inch of surface with a weight of nearly 15 lbs, at the top of Mt Blanc, which is over 15,000 feet high, the pressure is only $7\frac{1}{2}$ lbs, at the height of seven miles it is estimated that the air would be so rare that breathing would be impossible. For all practical purposes we may consider 200 miles the extreme limit of the atmosphere.

FIG 32 —THE BAROMETER



63 The pressure of the atmosphere is measured by an instrument called the barometer. If a glass tube about three feet in length be closed at one end, filled with mercury, and inverted with its open end in a cup containing the same substance, the mercury will fall in the tube until its level is about thirty inches above the level of the mercury in the cup. The weight, then, of a column of mercury thirty inches in height equals the weight of a column of air having the same base area and extending to the limit of the atmosphere. It is found that the weight of a column of mercury thirty inches in height and having a base area of one square inch is nearly 15 lbs; hence the pressure of the atmosphere is nearly 15 lbs on every square inch of surface.

The height of the column of mercury is affected by—

1 **The Varying Temperature of the Air**—Heat causes the air to expand and become less dense, hence the pressure of the atmosphere becomes less and the mercury falls.

2 **The Varying Amount of Watery Vapour present in the Air**—Watery vapour is much lighter than air, hence when much vapour is present the pressure is diminished (the mixture of air and watery vapour being lighter than air alone) and the mercury falls. This is why a fall of the barometer is an indication of rain.

64. MOVEMENTS OF THE ATMOSPHERE.—WINDS.—

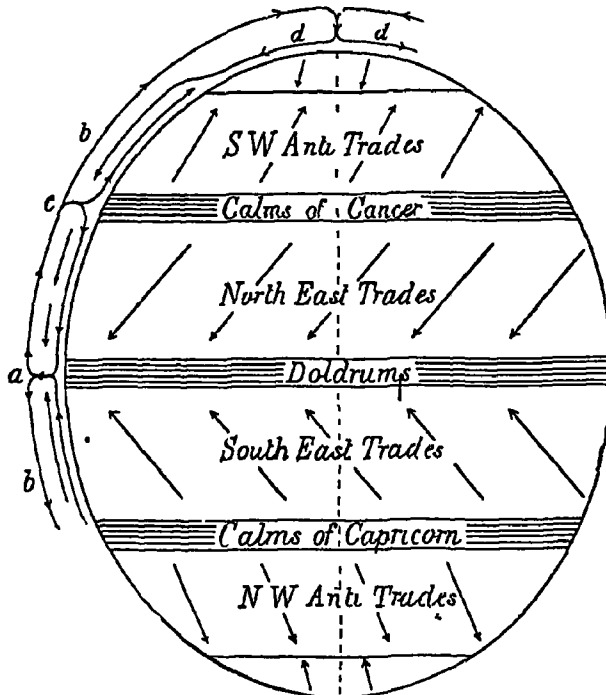
The air derives most of its heat from contact with the earth's surface. This surface is heated much more in the neighbourhood of the Equator than in other parts, hence the air over these regions is expanded and made less dense. This expansion causes the air above to be raised and to overflow towards the poles. The heavier air from the colder temperate and polar regions flows in below and forces the expanded and lighter air upwards, thus producing a constant circulation of warm and lighter air towards the poles, and of colder and heavier air towards the Equator.

65 **Constant Winds**—1 **Trade-winds**.—If the earth did not rotate on its axis, the direction of the air-currents would be north and south. The cold polar air flowing towards the Equator comes down towards the surface about latitude 35°, owing to the indraught caused by the heat of the tropics. Now, as the atmosphere moves with the earth, and the velocity due to rotation at which a place near the poles moves is much less than that of a place near the Equator, the air coming from the polar regions cannot attain the increased velocity of places nearer the Equator, and is consequently left behind, as it were, and becomes a north-east wind when to the north of the Equator and a south-east wind when to the south. The same law also holds good for currents of air as for currents of water—viz *that, owing to the earth's rotation, bodies moving on the earth's surface are deflected towards*

the right in the northern hemisphere, and towards the left in the southern hemisphere Hence winds coming from the poles towards the Equator would become, in accordance with this law, north-east and south-east winds. These winds blow regularly throughout the year, and are known as the North-east and South-east Trade-winds

Between the trade-winds lies a belt of calms known as the Doldrums, a region where heavy rains and thunderstorms alternate with calms

FIG 33.—GENERAL MOVEMENTS OF THE ATMOSPHERE



The lines on the left of the figure show the circulation between the Equator and the poles *b* is the upper, warmer current, going towards the poles, while *d* is the colder current, flowing towards the Equator. At *c* part of the upper current descends, as shown, and causes the variable but prevalent south-west and north-west winds

2 Anti-Trade-winds—The heated air from the equatorial regions flows over the trade-winds towards the poles, but the air has less room in this direction, and, being compressed, descends towards the surface. This descent is aided by the fact that as the air flows further from the Equator it cools and becomes heavier. In the northern hemisphere the air is deflected to the right as a south-west wind, while in the southern hemisphere it becomes a north-west wind. The influence of the great land masses, as well as the meeting with the winds from the polar regions, cause the south-west winds of the northern hemisphere to be somewhat variable; but in the southern hemisphere, where there are no great masses of land, these

winds blow with such steadiness and force, between latitudes 40° and 50° , that they are known as 'The Roaring Forties'

Between the trade-winds and the anti-trade-winds are the calm belts of Cancer and Capricorn, regions of deficient rainfall, in which lie many of the great deserts of the world. The calm belt in the North Atlantic is known as the 'Horse Latitudes,' from the fact that when ships plying between New England and the West Indies with cargoes of horses were becalmed in this belt, they were frequently obliged to throw the animals overboard on account of shortage of water

3 Polar Winds—The winds of the polar regions blow constantly for most of the year as cold, dry, biting winds from the north-east in the Arctic, and from the south-east in the Antarctic regions

66 Periodical Winds—1 **Land and Sea Breezes**—During the day the land becomes more rapidly heated than the sea. The air in contact with the land becomes heated and consequently expands, lifting the layers of air above it and causing an overflow towards the sea, while the cooler and heavier air from the sea flows in below towards the land, thus producing a sea-breeze, which begins to blow during the forenoon and dies away towards sunset. During the night the land cools more rapidly than the sea, the air over it becomes heavier than the air in contact with the water, and consequently flows out to sea as a land-breeze, which gradually dies away towards the morning

2 MONSOONS (Arabic, *mausim*, a season)—The South-west Monsoon—During the northern summer the sun is overhead towards the Tropic of Cancer, i.e. over Mexico, Northern Africa, and Southern Asia. These regions therefore become greatly heated, and the air in contact with them expands and rises. This causes air to flow inwards towards the heated areas, and in the case of India and South-eastern Asia the effect is most important. The wind which is drawn landwards from the Indian Ocean is the south-east trade-wind, whose direction as far as the Equator is towards Africa and South-western Asia. But at the Equator the rate of rotation of the earth is greatest, so when the wind has crossed this line the decreased rate of rotation converts the south-east into a south-west wind. Thus a continuous sea-breeze from the south-west blows over South-eastern Asia from May to October; this is called the South-west or Summer Monsoon. During these months the north-east trade-wind of this region is overpowered and broken up. The monsoon blows most strongly against the western coast of India, and sweeps across the Peninsula and the Gangetic Plain, giving rain in greater or less abundance to both these areas. The monsoon wind which sweeps over Sind and the Punjab is weaker, and moreover there are no mountain ranges lying across its path to condense its moisture. The Bay of Bengal branch of the summer monsoon gives abundant rain to Burma, and meets the Arabian Sea branch which has swept over India in the Assam Hills. Here the rainfall is phenomenal, the greatest in the world

The North-east Monsoon —During the southern summer, when the sun is overhead towards the Tropic of Capricorn, the conditions are reversed, and the north-east trade-wind is drawn southwards towards the Equator. As the whole of India lies to the north of the Equator, no deflection occurs, and the winds it experiences are from the north-east and are known as the North-east or Winter Monsoon. This wind is generally dry, having blown in from Central Asia, and the slight winter rains of Northern India are due to the fact that the wind has crossed the snow-capped ridge of the Himalayas. But the section of the monsoon which crosses the Bay of Bengal brings rain to the east coast of India. In the north of the Bay the wind is light, but as we proceed southwards along the coasts of Bengal and Madras, the winter rainfall increases until it reaches about 30 inches for the months of September, October, and November in Madras and Ceylon. Ceylon therefore has two rainy seasons, and Madras receives more than half its rainfall at the end of the year.

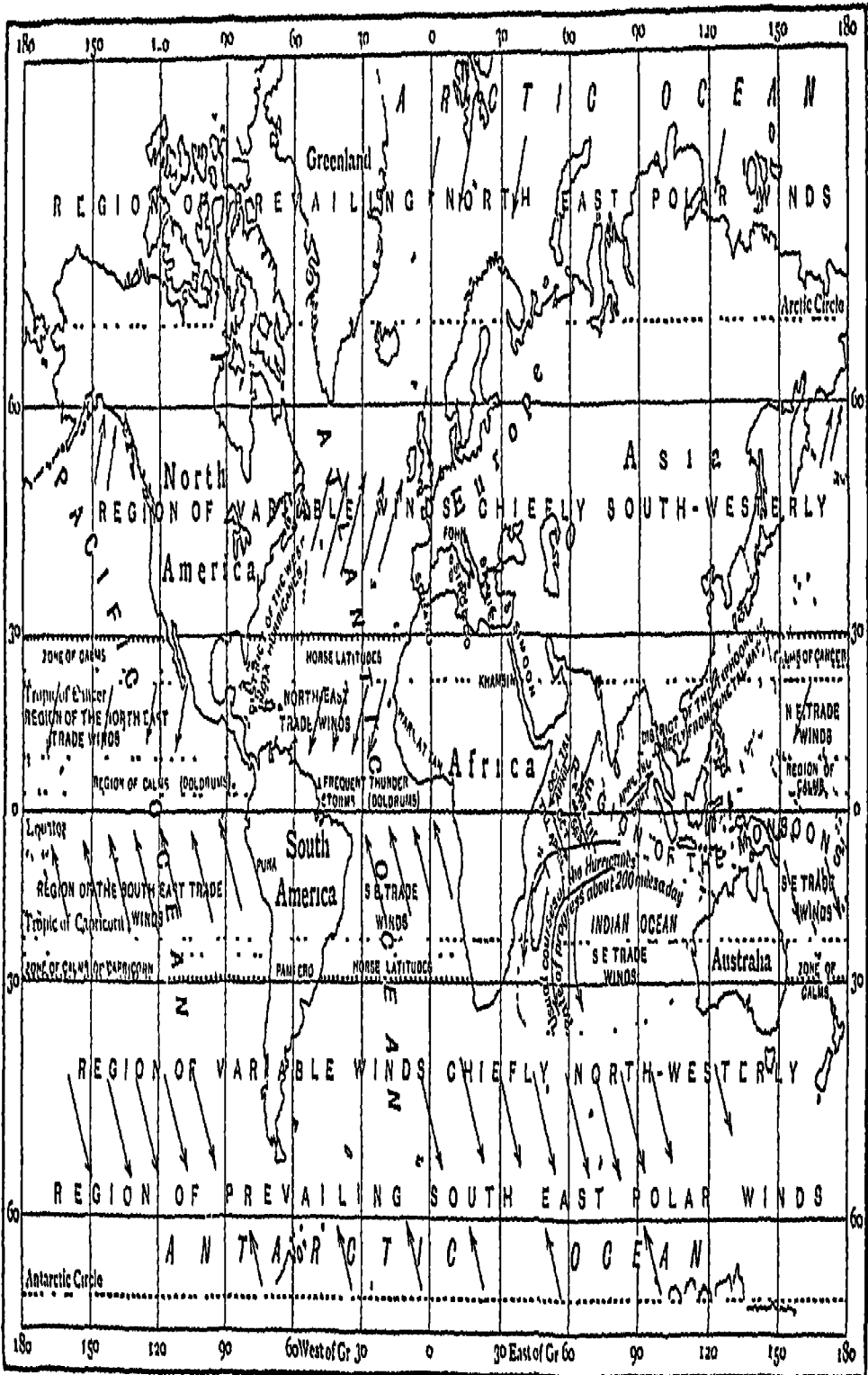
Monsoons also occur in Australia and Central America, but the land masses being so much smaller they are not so important as those of South-eastern Asia—India, Indo-China, and China.

67 Local Winds —In certain districts winds blow with a certain amount of regularity during part of the year, and thus receive special names. A hot, dry, unpleasant wind blows from the Sahara to the surrounding countries. In Sicily it is called the Sirocco, in Spain the Solano, while it reaches the Alps as the Föhn. In Egypt it is the Khamsin, towards the Gulf of Guinea the Harmattan. The most dreaded of these hot winds is the Simoom of the Arabian deserts, which is so hot, dry, and suffocating as to compel all living things to rush for shelter at its approach. The Mistral of Southern France, and the Bora from the Alps, are cold winds from the north and north-west. The Pampero is a violent wind from the north and north-west which sweeps across the pampas of South America.

68. Occasional Winds and Storms —When a small portion of the earth's surface becomes heated more than the surrounding parts, the air over this limited area expands, ascends, and spreads outward in all directions. There will thus be less pressure on the barometer within this area, and increased pressure outside of it. The heavier air from the outside will consequently flow towards this inside area. As the air rises it cools, and the moisture it contains is condensed, thus setting free a large amount of latent heat, which rarefies the ascending current still more, and strengthens the draught. The moist air flowing in below from all sides brings fresh vapour, which condenses as clouds, and rain frequently occurs. Thus we have the origin of a storm.

69 *The area of low barometric pressure, with its accompanying winds, is called a Cyclone.* The currents of air flowing towards the low-pressure area acquire a whirling motion. In the northern hemisphere this motion is in the contrary direction, and in the southern hemisphere in the same direction as that of the hands of a clock. In addition to its whirling

FIG. 34.— BIVALENT WINDS.



motion, the cyclone has a progressive motion, which follows the direction of the prevalent winds. This motion, in the tropics, is westward and towards the poles. As it approaches the temperate zone it is turned eastward, and follows the course of the anti-trade-winds, describing a curve in the shape of a parabola. As the cyclone moves towards the poles, the central low-pressure area widens and the storm gradually dies away.

Frequently between two cyclones there is a region of high pressure, from which gentle winds blow outwards in all directions, forming an anti-cyclone.

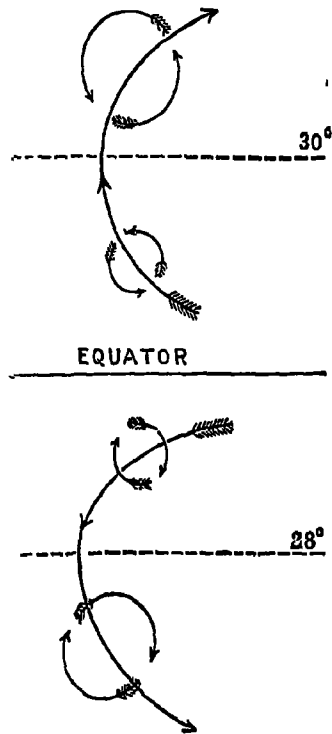
Tornadoes are local cyclonic storms of great violence but of small extent. The path of a tornado rarely exceeds a quarter of a mile in width, and dies away after a destructive passage of twenty or thirty miles. Within this path almost everything is destroyed: buildings and trees are blown down, and heavy objects are sometimes carried to a considerable distance. Tornadoes are most common in the United States. Similar storms occur in other parts of the world. In the West Indies they are known as Hurricanes, and in the China Seas as Typhoons.

Waterspouts.—When these violent storms occur at sea the funnel-shaped cloud, which is formed by the whirling motion of the wind, sometimes descends to the surface, draws up the water, and connects it with the cloud above, forming a column of water known as a waterspout.

A similar action to this in the desert produces the dreaded sandspouts of the deserts of Africa and Arabia.

70. MOISTURE OF THE ATMOSPHERE—Vapour.—In addition to the oxygen and nitrogen of which the air is composed, there is always a quantity of watery vapour present. Vapour is always rising from the surface of the water, and, as it is only about three-fifths as heavy as air, it is easily carried by the winds and diffused through the atmosphere. Heat is the cause of evaporation, which is therefore greatest near the Equator. This vapour is constantly being restored to the earth by condensation. When air which is saturated with vapour has its temperature lowered, some of the vapour condenses and is deposited as dew and rain,

FIG 35 —MOTION OF A CYCLONE



which, if the temperature falls below freezing-point, become hoar-frost and snow.

71. Dew—At night the earth becomes cooler than the air above it. This causes the vapour contained in the air to be condensed and deposited on the cooled surface. This deposit is dew. When the temperature falls below 32° F this deposit becomes frozen, as hoar-frost or rime. Clouds check the radiation of heat from the surface of the earth, so that more dew is deposited on clear than on cloudy nights.

Fog and Mist—When the vapour is condensed and remains suspended in the air near the surface of the earth like a cloud, it is called a fog. A mist is similar to a fog, but is composed of larger particles of moisture.

Clouds are fogs or mists formed at a greater elevation.

72. RAIN is formed by the condensation of the watery vapour of the air. The minute particles unite and form drops, which fall to the earth through the action of gravity. When much rain falls, a great amount of latent heat is set free and the temperature rises. A rainy climate is, therefore, never very cold.

The rainfall of a country chiefly depends upon the following circumstances:—

1. **The Direction of the Prevalent Winds**—When warm winds blow towards a cool district, the decrease in temperature causes condensation, and much rain falls. Hence the anti-trade-winds blowing from warm to cooler regions bring heavy rains, while in the case of the trade-winds, which blow from cool to warmer regions, the rise of temperature prevents precipitation, and on the ocean little rain falls in those regions.

2. **The presence of land masses, especially mountains, tends to condense the vapour in the air.** The south-west monsoon, laden with moisture from the Indian Ocean, brings copious rain to the Western Ghats. Near Bombay the annual rainfall is 260 inches. After sweeping across India, the Khasi Hills again deprive the monsoon of much moisture, the annual rainfall here being over 500 inches. The Himalayas condense the remaining moisture, and after passing over them, the monsoon is an exceedingly dry wind, causing the great deserts of Northern China.

In the same way the hills of Ireland, Scotland, and Norway condense the moisture of the warm south-west wind, and thus account for the heavy rainfall on the western sides of those countries.

3. **Vegetation**—Forests check evaporation. The valley of the Amazon, which is covered with dense forests, is a region of heavy rainfall.

A study of the maps on pp 61, 62, shows that in the Northern Hemisphere the south-west monsoon brings an abundant rainfall to India, Burma, and China, whereas the north-east monsoon

FIG 36 —THE WORLD Rainfall June to August Summer in Northern Hemisphere

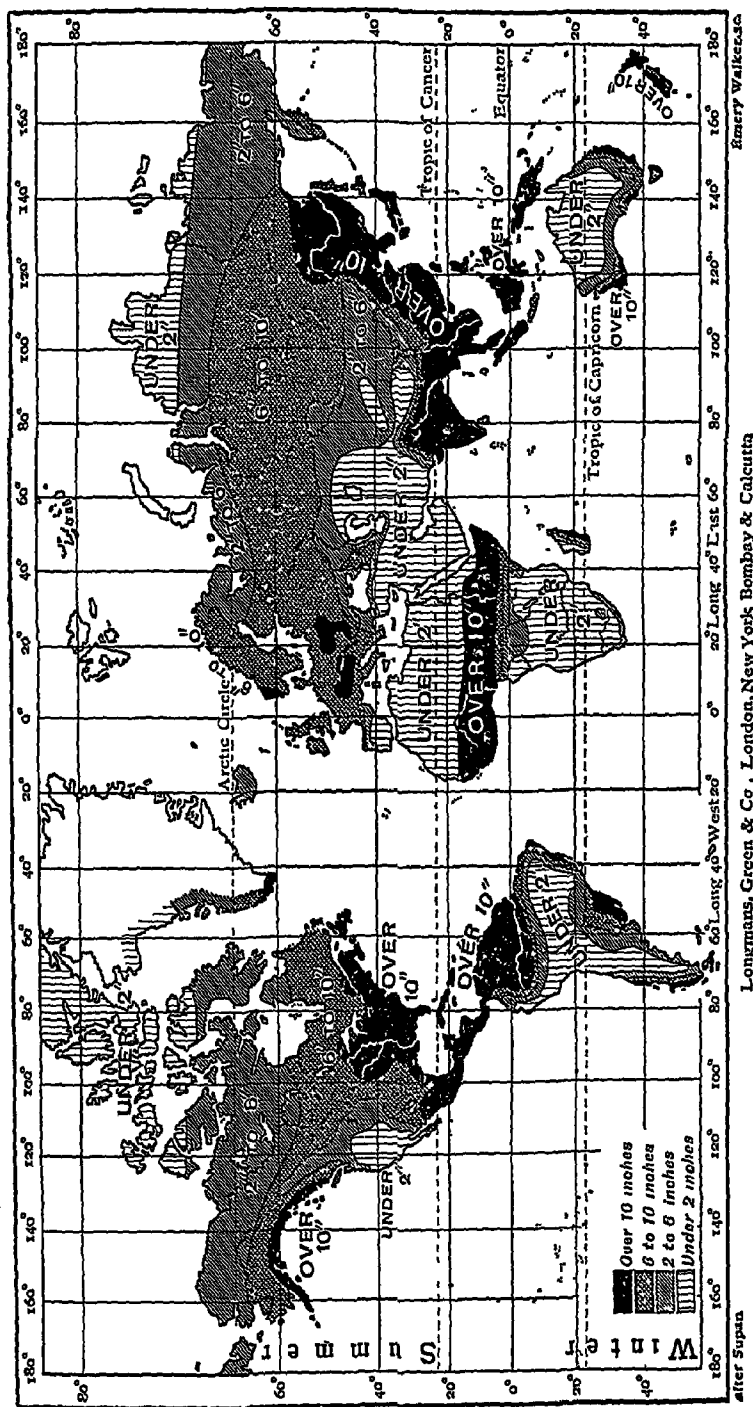
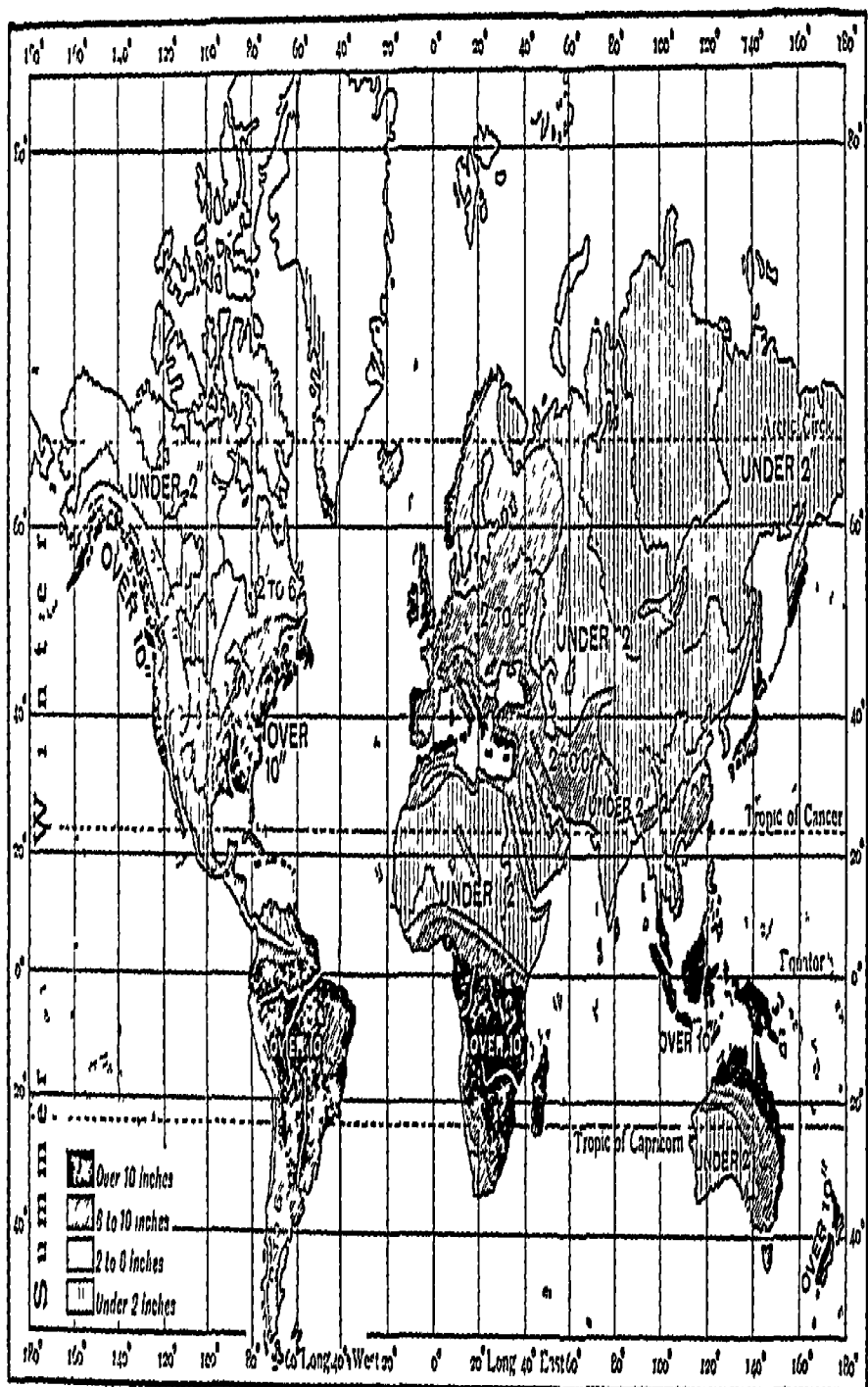


FIG 37—THE WORLD Rainfall December to February Winter in Northern Hemisphere.



after Japan

Longmans, Green & Co London New York Bombay & Calcutta

Emery Walker cc

coming as it does from over great areas of land, brings a very small rainfall. Western Europe being under the influence of prevailing south-westerly winds receives a sufficient rainfall all the year round.

PRACTICAL EXERCISES ON MAPS [pp 61, 62]

1 A study of these maps shows that generally speaking the rainfall all over the world is heaviest in summer. Why is this?

2 In North America in winter there is a heavy rainfall upon the west coast but only a small rainfall in the interior. What are the principal conditions that cause this great difference?

3 By a study of the map showing prevalent winds on p 58 the causes of the extreme dryness of Northern Africa can be seen. What are these causes?

4. Explain why the western side of South America receives a much less annual rainfall than the eastern side.

73. CLIMATE.—The climate of a place chiefly depends upon—

1 **Latitude.**—This affects the temperature of the air, the greatest amount of heat being received where the sun's rays strike the earth's surface vertically (see fig 5, p 7)

2 **Elevation.**—The air in elevated regions is thinner, and cannot receive so much heat. It is also less affected by the radiation of heat from the earth's surface, and it contains less watery vapour, which tends to check radiation.

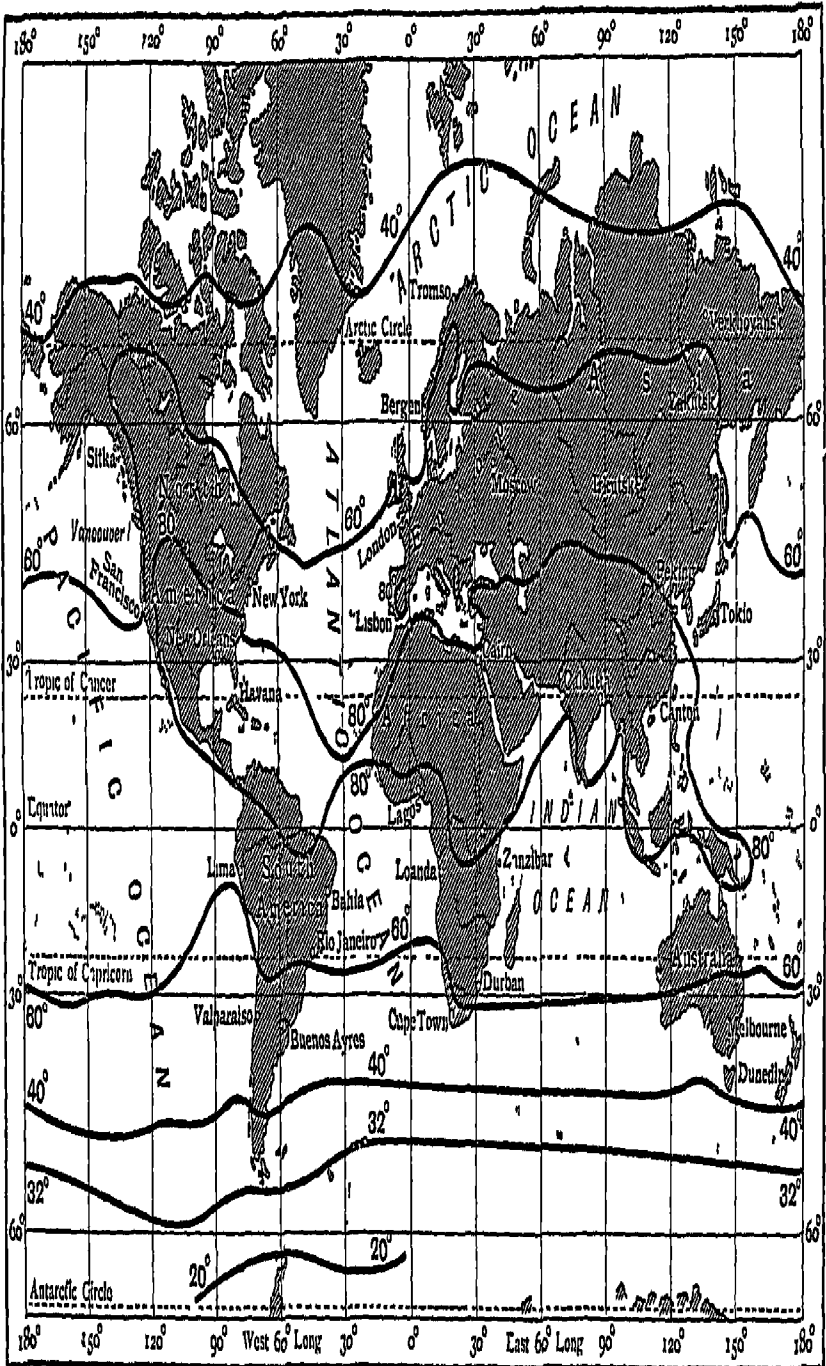
3 **Distance from the Sea.**—In summer the sea is cooler than the land, and the cooler winds from it moderate the temperature, while in winter the sea does not part with its heat so readily as the land, and the warm winds from it tend to raise the temperature. Hence places near the sea have a more equable temperature.

4 **The Direction of the Prevalent Winds.**—Warm winds, like the south-west monsoon and the south-west winds of the North Atlantic, carry moisture and warmth to the lands they blow over.

5 **The Character and Direction of the Nearest Ocean Currents.**—The effect of the Gulf Stream, which carries the heat of the tropics to the north-west of Europe, and of the icy Arctic current, which brings the cold of the northern regions to the coasts of the United States, have already been mentioned.

The temperature of the air is indicated on the maps by lines called **Isotherms**, which connect places having the same mean temperature. It will be noticed that they do not correspond with the lines of latitude, but show considerable divergence, especially in the northern hemisphere. This divergence is largely due to the above mentioned causes. Yearly isotherms indicate the mean annual temperature of the air. They do not, however, give a very good indica-

FIG 810—ISOTHERMS JULY



Longmans, Green & Co., London New York, Bombay & Calcutta

Emery Walker sc.

tion of the actual climate of a place, as may be seen from the following example. London and Astrakhan have a mean annual temperature of about 50° , but London has a January temperature of 39° and a July temperature of 68° , while Astrakhan has temperatures of 21° and 78° for the corresponding months. In one case there is a difference of 24° , and in the other a difference of 57° between the winter and summer temperatures. Monthly isotherms furnish a much better indication of the temperature.

6 The Direction of the Mountain Ranges—Where the ranges intercept warm and moist winds, they cause a heavy rainfall on the windward, and comparative dryness on the other side. The annual rainfall on the south of the Himalayas is 80 inches in some places, while on the northern side it falls to 30 inches. In other cases mountain ranges protect districts from cold winds. The Alps, for example, screen Northern Italy from the cold north winds.

7 The Slope of the Land has an important effect on the temperature of a place. The south side of a range of mountains receives the sun's rays more nearly vertical than the north side, and is consequently much warmer.

8 Cultivation has in many cases affected the climate. England, which was once largely covered with forests, has probably a drier and colder climate than it had before the forests were cleared.

PRACTICAL EXERCISES ON MAPS [pp 64, 65]

- 1 How do you explain the high latitudes of the January isotherms of 40° and 30° in the North Atlantic?
- 2 In the Northern summer the isotherm of 60° touches the Arctic Circle, but in the Southern summer it only reaches about 45° south. What is the cause of this difference?
- 3 What is the cause of the great southerly dip of the winter isotherms of 0° , 10° , 30° , 40° in the Central United States?
- 4 Give approximately the winter temperatures of London, New York, Moscow, Tokio, Cape Town, Melbourne, Bombay, Calcutta and Colombo. (Both maps must be studied, as winter in the Northern Hemisphere corresponds with summer in the Southern.)
- 5 Give approximately the summer temperatures of London, Calcutta, Cape Town, Melbourne, San Francisco and Colombo.

74 DISTRIBUTION OF PLANTS.—The character of the vegetation chiefly depends upon the temperature, the amount of moisture received, and the nature of the soil. High temperature and plenty of moisture produce the most luxuriant vegetation. Plant life may be broadly divided into eight zones, according to the typical forms of vegetation, the boundaries of which are chiefly determined by the range of temperature.

- 1 The Equatorial Zone—Palms and bananas
- 2 The Tropical Zone—Figs and tree-ferns
- 3 The Sub-tropical Zone—Laurels and myrtles

4. The Warm Temperate Zone —Evergreens of various kinds.
5. The Cold Temperate Zone —Deciduous trees (oak, &c)
- 6 The Sub-Arctic Zone —Coniferous trees (pines, firs, &c)
- 7 The Arctic Zone.—Dwarf shrubs, lichens, &c
- 8 The Polar Zone.—Lichens and mosses

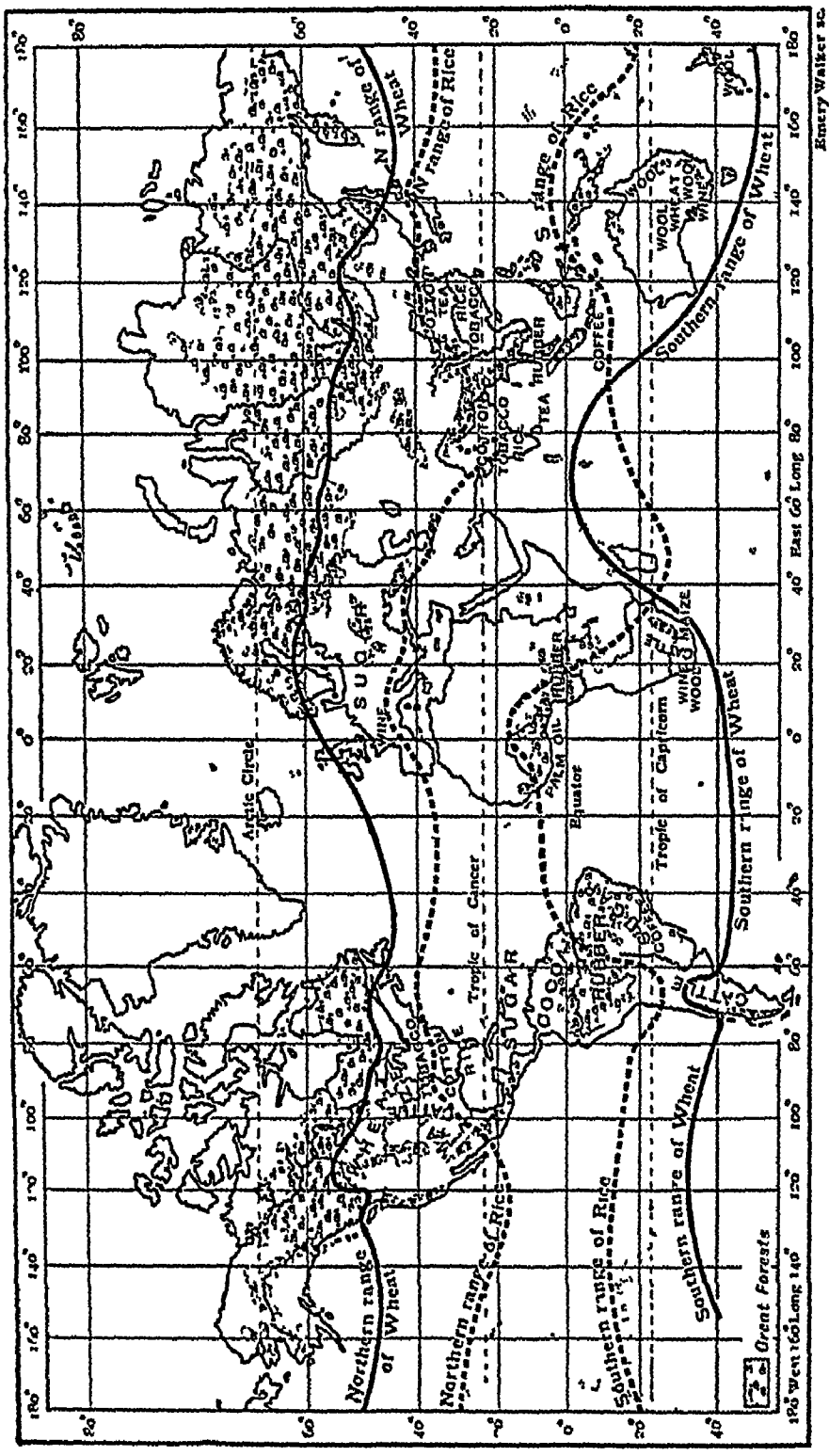
These divisions embrace only the chief typical wild trees, shrubs, &c The map on p 68 shows also the range and locality of products that are cultivated to supply food and raw materials for manufactures The most important food grains are wheat and rice Wheat has a wide range It grows freely on the plains to a latitude of about 60° north and can also be cultivated upon high lands within the tropics The growth of rice depends upon excessive moisture as well as heat, and flourishes best in the great river valleys of India, Burma, China, and the United States

Tea and coffee are grown mostly in the Tropics Sugar and tobacco have a wider range, while cotton, the most important plant that is grown for manufacturing purposes, flourishes in the warm river valleys just north of the tropics

DISTRIBUTION OF ANIMALS.—Animals may be divided into two classes. 1. Wild. 2. Domestic. The latter were formerly wild, and wild cattle, horses, sheep, and goats are still to be found. Wild animals are distributed all over the globe, but in many areas, such as Western Europe, the larger and more destructive have either been killed off or have moved away to areas that are thinly peopled, but there are many wild animals still living side by side with man. Tigers, elephants and other wild animals are to be found in large numbers in India, and immense herds of antelopes, elephants, &c., roam over southern Central Africa. Bears and wolves are widely distributed in northern Asia, Europe and America. The lion, rhinoceros, hippopotamus and other large animals are to be found in Central Africa. Monkeys in great numbers live in most tropical countries. Birds are distributed all over the world, and snakes abound in the Tropics.

Of the domestic animals the most important are horses, cattle, sheep, goats, and dogs. The distribution of these animals depends on mankind and suitable conditions of climate and food Australia possessed only a few wild animals before it was colonised by white men now it contains immense numbers of sheep and cattle The Argentine is the home of millions of sheep and cattle, where formerly only a few wild beasts were to be found upon its grassy plains, and in North America cattle have

FIG 37c—THE WORLD PRODUCTS AND Forest Lands



supplanted the bison that up to recent times roamed in immense herds across the prairies.

75. DISTRIBUTION OF MANKIND ON THE GLOBE.—

The distribution of mankind upon the globe depends upon physical conditions. Fertility of soil, climate, position as regards the equator, rainfall, and other circumstances, combine to render an area fit for the home of a great people. In the course of ages great changes have taken place in the physical conditions of the earth's surface, and areas that once supported large populations have deteriorated. Thus, the lands that were the home of the Assyrians are now mostly desert, and the fertile area of the Nile valley, that in ancient times supported teeming millions, has been so much encroached upon by the desert that only a narrow strip along each side of the river can be cultivated.

There are great stretches that barely support one person per square mile, there are other regions where more than a hundred to the square mile are to be found. The chief physical conditions that render any area capable of supporting a dense population are.—

1. Its position upon the globe as regards distance from the equator. In the extreme North of America and Asia the sun shines for only six months, and there follows an equally long Arctic night. Land and water are frozen. There is little vegetation, without which animal life is impossible. Hence in these vast tracts there are to be found only a few wandering Eskimos in America and Samoyedes in Asia, who build their homes of frozen snow, and move from place to place in search of animals that may be found upon the ice or upon the frozen tundras of the far north.

2. **Climate.**—The great land hemisphere lies round the North Pole, and a considerable part is within the North Temperate Zone, where there are no great extremes of heat and cold; where there is an abundance of fertile soil and a plentiful rainfall—conditions all in favour of the growth of food plants, grasses, and trees—and an equable climate in which it is possible for man to work all the year round. The northern shores of the Mediterranean and the plains and uplands of Western and Central

Europe, the valley of the Ganges, the coast lands of China, have been thickly-peopled for centuries.

3. **Relief of the Land.**—In regions of lofty mountains and elevated plateaux, the extremes of heat and cold and the want of fertile soil make large food-crops impossible, and such districts are the home of people who are widely scattered. Thus in the Himálayan region, upon the plateau of Tibet, along the deep valleys of the Andes, only a scanty population is to be found.

4. **Fertility of the Soil and Rainfall.**—Fertile soil is generally found in river valleys or in plains that have in the course of ages been formed by the constant action of rain and streams washing down the finer soil from higher regions. In some parts of the earth vast areas of fertile soil are associated with an abundant rainfall and a warm or temperate climate—just the conditions for producing rapid growth of vegetation, and it is such regions that can best support large numbers of people, as well as the animals that are useful for food and work. In India, Burma, Indo-China, and China, the south-west monsoon brings an abundant rainfall over great areas of fertile river valleys, and causes a rich growth of vegetable foods.

The Himálayas form a barrier to the south-west rain-bearing winds, and north of this mountain region lie the desert lands of Tibet and China. The great central belt of high plateau across Central Africa is well watered by tropical rains, and the conditions are favourable to rich vegetation. Hence this region is thickly peopled, and supports vast numbers of both wild and domestic animals. But in Northern Africa, where the prevailing winds are from the North and East, and where the rain-bearing winds from the Atlantic do not penetrate, there is a vast area of sandy desert (the Sahara) capable of supporting only a few tribes of wandering Arabs.

In Central, Southern, and Western Europe the climate is temperate: there is plenty of fertile soil in the river valleys and lowland plains, and an abundant rainfall—conditions all in favour of the growth of food and other plants, and across this part of the continent is to be found a dense population, ranging from over 600 to the square mile in England and Wales, about 700 to the square mile in Belgium, and over 800 to the square mile in Saxony.

North America shows great variations. The far north is frozen for a large part of the year, but across the centre of the continent, from the Atlantic to the Rocky Mountains, there are vast areas of prairie and rolling country, intersected by noble rivers, such as the Mississippi and the Missouri and the numberless rivers that flow into the Great Lakes, into Hudson Bay, or to the Arctic Ocean where a fertile soil and an equable climate combine to render the country suitable for the production of wheat and maize in the central zone, and sugar and cotton in the southern. There are also large areas of grass lands, where immense herds of cattle are fed

South America is in some ways similar to North America. It has a long range of lofty mountains along its western side, and mighty rivers flow to the east and south. But it lies more within the tropics, and its northern area is elevated and covered with dense forests. Farther south are the plains of Argentina, where the conditions are favourable to both vegetable and animal life

The greater part of Central Australia has a very small rainfall (see maps on pp. 61 and 62), and only the eastern and southern regions have sufficient for vegetable growth. There are only small areas in the whole continent suitable for the home of a large population

Mankind is generally divided into three types, classified according to colour, as **Black** or **Negro**, **Yellow** or **Mongolian**, **White** or **Caucasian**.

1. **The Black Type** originally inhabited hot countries, and is distinguished by black woolly hair, dark complexion, a broad, flattened nose, thick projecting lips and jaws, and prominent eyes with a yellowish cornea 175,000,000

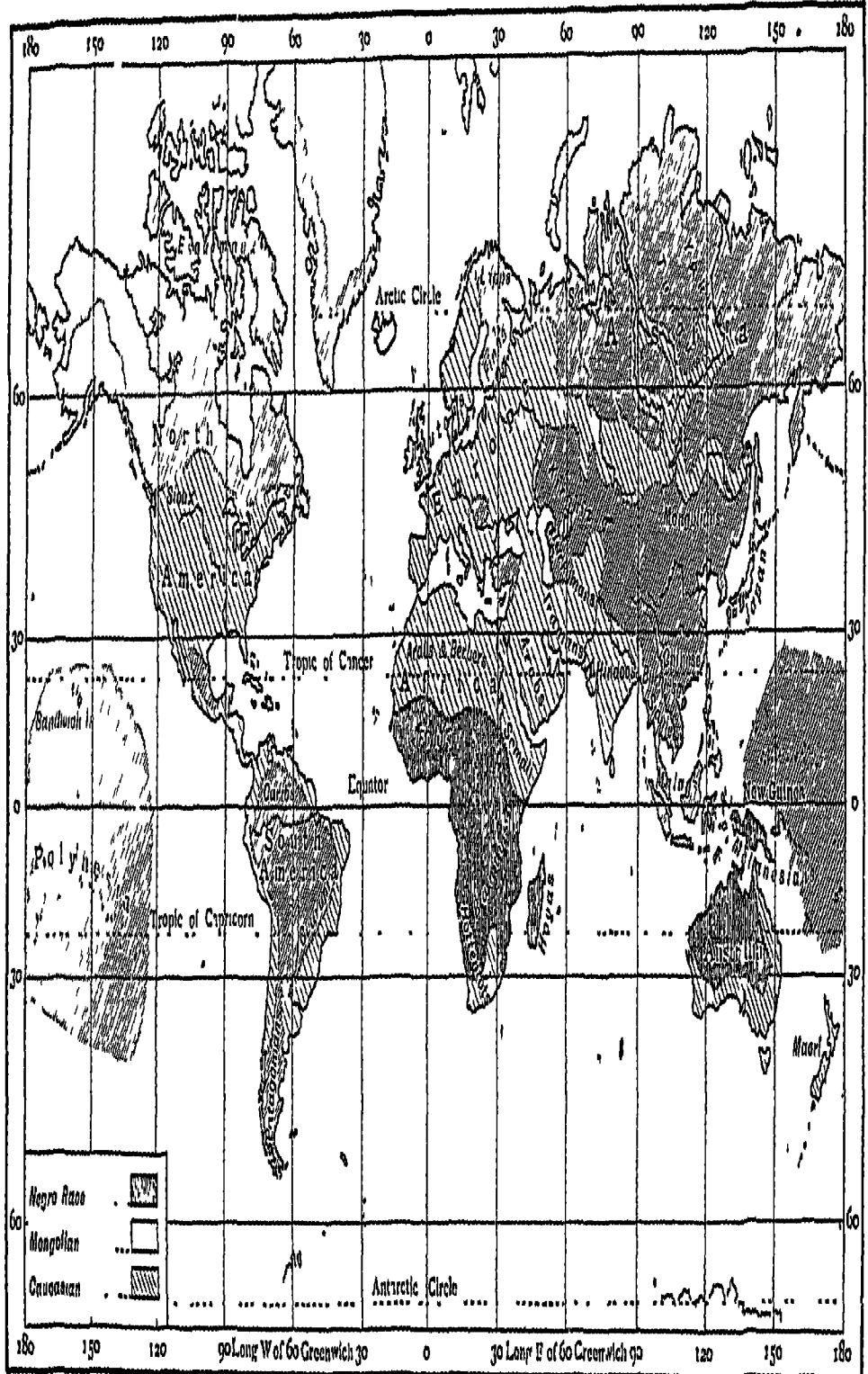
The chief divisions are the **African**, inhabiting the whole of Africa south of the Sahara, and the **Australasian**, occupying Australia, New Guinea, and the islands comprised in Melanesia

2 **The Yellow Type** is the most widely distributed of the three types. The characteristic features are straight black hair (scanty on the face), a light yellow complexion varying from olive to brown, prominent cheekbones, deep-set eyes, and eye-brows slightly oblique 520,000,000

It is divided into three principal divisions —

(a) **The Mongolian**, including the Mongol-Tartars of Central and Northern Asia, Russia, and Turkey, the Chinese, Burmese, Siamese, Japanese, and Esquimaux, the Finns, Lapps, and Samoyedes of Northern Europe, and the Magyars of Hungary

FIG 88--RACES OF MANKIND



(b) The **Malayo-Polynesians**, including the Malays, the inhabitants of the Pacific Islands, the Maoris of New Zealand, and the Hovas of Madagascar

(c) The **American Indians**, comprising the aboriginal inhabitants of America from the Arctic regions to Cape Horn 20,000,000 (not included in Yellow Type)

3 The **White Type** embraces the most highly civilised and enterprising peoples of the world. The distinctive features are straight or curly hair, white complexion, which in some places merges into olive, dark brown, or even black, prominent nose, and regular features. It is divided into two sections, light and dark. Some of the dark races are almost as dark as Negroes, but differ from them in hair, features, language, &c. The chief light races (770,000,000) are —

(a) The **Teutonic**, inhabiting England and her colonies, North-eastern Europe, and the United States, Germany, Scandinavia, Denmark, and Holland

(b) The **Slav**, inhabiting Russia, Poland, Bulgaria, and Servia

(c) The **Caucasic**, which includes the Circassians, Georgians, Afghans, and the Berbers of North Africa

The chief dark races are :—

(a) The **Romantic**, including the people of Southern Europe

(b) The **Semitic** includes Arabs, Syrians, and Jews

(c) The **Hamitic** includes Egyptians, Libyans, Numidians, the Copts, the Kabyles, the Somali, and Gallas

(d) The **Asiatic Aryans** comprise the Hindus, Persians, Armenians, Baluchis, Kurds, and Parsees.

EXAMINATION PAPERS

- A 1 Why is the water of the Mediterranean saltier than that of the Baltic?
- 2 Why is the temperature of the ocean more uniform than that of the land? Why does the surface temperature of the ocean vary?
- 3 What is the effect of the heat of the sun upon the water of the ocean?
- 4 What are the principal influences which modify the circulation of the water between the equatorial and polar regions?
- B 1 Describe the Gulf Stream. Why does it flow towards the north-east?
- 2 Compare the currents of the Atlantic with those of the Pacific
- 3 Show how the winds affect the currents of the Indian Ocean
- 4 Why is the winter temperature of the water in New York Harbour as cold as that near the North Cape?
- C 1 Explain the action of the moon in causing tides, and state why the interval between high tide and the corresponding high tide next day is nearly 25 hours
- 2 Why are tides at new and full moon higher than those at other times? What are these tides called?
- 3 What circumstances cause the tidal wave to move onwards?
4. Explain why the tide rises higher at some places than at others

- D 1 What is meant by the pressure of the atmosphere? Explain the effect of (1) heat, (2) aqueous vapour on atmospheric pressure
- 2 Describe a mercurial barometer What is observed when a barometer is taken to the top of a mountain?
- 3 Explain clearly the manner in which the atmosphere is heated
- 4 How are the trade-winds caused? Over what districts do they blow?
- E 1. Explain how land-breezes and sea-breezes are produced
2. What are the monsoons? State why the south-west monsoon blows from May to October
- 3 What are cyclones and anti-cyclones?
- 4 How is the condensation of aqueous vapour in the atmosphere brought about?
- F 1. Give the causes which may produce an excessive rainfall in a district, and give examples
2. Why are the south-west winds in Britain usually accompanied by rain, while east winds bring dry weather?
3. Why is it that on going up in a balloon we find that the higher we ascend the colder is the air?
4. What are the chief conditions affecting the distribution of fairs on the earth's surface?

THE WORLD'S TRADE

THE BEGINNINGS OF TRADE.—When the world was thinly peopled its inhabitants were chiefly employed either in cultivating the land or in moving about from place to place with their flocks and herds. Those engaged in raising crops lived in tropical regions where along the river valleys there were fertile soil and an abundant rainfall. Those employed in raising animals lived in drier and cooler regions and moved about in search of food and water for their flocks. Their wants were few and there was little interchange of commodities. But as the population increased, people moved farther from their old homes and found new homes in distant lands. They discovered new food products, fresh fibres for weaving into clothing, precious stones, minerals, metals, &c, for the making of useful tools, weapons, or ornaments, and gradually things found in one country were exchanged for those grown in another. In early days of written history we learn that people who lived on the shores of the Mediterranean sent ships along the east coast of Africa for gold, ivory, and other things. The Phœnicians sent traders even to England for

tin, and there was an interchange of goods between the different parts of the inhabited world.

TRADE IN MODERN TIMES—Owing to the great increase in the population of the nations of Europe and North America, an interchange of products is essential. The United Kingdom could not produce sufficient food for its dense population, and so while part of its people are employed in agriculture, the larger part are engaged in mining or in manufacturing goods that can be exchanged for food and other things that we need. Canada and Australia produce more wheat and wool than can be used in those countries, and the surplus is sent to the United Kingdom. A similar exchange is going on all over the world. Asia sends its surplus tea, silk, raw cotton to Europe and gets manufactured goods in exchange. North America exchanges the produce of its fields, forests, and mines for the things she needs that are produced in the Old World. South America grows coffee, sugar, cocoa, and raises vast herds of sheep and cattle upon the plains of the Argentine. These natural products are sent to Europe and North America and exchanged for machinery, materials for railways, iron and steel goods, and manufactured stuffs for clothing.

INTERNAL TRANSPORT—All civilised countries have systems of railways by which goods can be transported from one district to another. Rivers and canals serve the same purpose. In Europe, French goods can be sent by rail to any other country on the Continent, and as France has a long coast-line open to the Atlantic and to the Mediterranean Sea, she also enjoys the advantage of sea transport. On the other hand the United Kingdom must send all her goods to other lands by sea, and this necessity has resulted in the building of a large number of ships. Railways cross Europe from north to south and from west to east, and its eastern railroads are continued across Northern Asia to the Pacific. In North America great trunk lines of railways carry goods right across the Continent and join the Atlantic with the Pacific.

EXTERNAL TRANSPORT.—The world's shipping is of enormous extent. There are over thirty thousand vessels of a hundred tons or upwards with a carrying capacity of over forty million tons. The British Empire possesses about one-third of

these ships of a tonnage amounting to nearly half of the whole. In addition to these there are an immense number of smaller vessels employed in coastal trade and carrying goods by rivers and canals.

OCEAN ROUTES.—The great ocean routes from the United Kingdom may be divided into **East, South, and West.** The trade to the **West** is mainly from Liverpool, Glasgow, Southampton, to the seaports of Canada and the United States. The **Southern** trade is largely from London, Liverpool, and Southampton, to South Africa and South America with extensions to Australia. The great **Eastern** route for European ships is through the Mediterranean, the Suez Canal, the Red Sea and so eastwards to India, China and Australasia.

Before the opening of the Suez Canal, ships bound to the far East had to sail round the south of Africa, and ships usually took about three months on the voyage to Calcutta. Nowadays a traveller can leave London, join his ship at Marseilles, and in a fortnight can land in Bombay. There he takes a train which conveys him in less than two days to Calcutta. A canal has been cut through the Isthmus of Panama, and this, when in full operation, will cause a great saving in time for ships bound for the western shores of the United States and Canada and save the long voyage round South America.

CABLES.—The continents are linked up by ocean telegraph cables which are connected with telegraph systems on land, and merchants are thus able to communicate in a few hours with any part of the world.

Wireless stations connect the continents and enable messages to be sent to and from ships at sea.

ASIA

POSITION AND EXTENT.—Although usually spoken of as a separate continent, Asia is continuous with Europe, with which it forms the great land-mass known as **Eurasia**. The total area of Eurasia is about 21 million square miles, of which Asia occupies more than 17 million square miles or just over four-fifths. Asia is the largest of the continents, including about one-third of the land surface of the globe. It is half as large again as Africa, and nearly six times as large as Australia, the two other Old World continents. The mainland extends from the Equator to within 12° of the North Pole, these latitudes corresponding almost exactly with those of North America; but whereas North America stretches over 105° of longitude, Asia includes 155° of longitude between its extreme eastern and western points.

BOUNDARIES.—On the north, east, and south sides the shores of Asia are washed by the Arctic, the Pacific, and the Indian Oceans. On the west Asia is continuous with Europe, from which it is divided by the Ural and Caucasus Mountains, and by the Black and Mediterranean Seas. The Red Sea, which separates Asia from Africa, is like a long lake bordered on the east and west by desert lands.

The natural boundary between Asia and Europe is not very clearly defined, the Ural Mountains rise so gradually on the European side that they hardly break the continuity of the vast plain stretching from the Atlantic to the Behring Sea.

SHAPE AND COAST-LINE—Asia is, speaking generally, a compact land mass, and its shores are not so deeply indented as those of Europe and North America. This is largely due to its

great size and its high average elevation. Europe has a mile of coast-line to every 190 square miles of surface, while Asia has only one mile of coast to 500 square miles of surface.

The east coast.—This coast is remarkable for its series of land-locked seas, which communicate with each other by several straits.

1. The Behring Sea is bounded seawards by the Aleutian Islands, and on the south by the peninsula of Kamchatka.

2. The Sea of Okhotsk is enclosed by the Kurile Islands, and separated from the Japan Sea by the large island of Sakhalin.

3. The Japan Sea lies between Sakhalin and the peninsula of Korea, and is protected seawards by the Japan Islands.

4. The Yellow Sea and the East China Sea together form the next opening, which is enclosed by the Riu-kiu (Lu-chu) Islands and Formosa. The Yellow Sea is almost cut into two parts by the peninsulas of Shantung and Liau-tung, the latter of which terminates in the now celebrated Port Arthur.

5. The South China Sea is very large, and is enclosed by the Philippine Islands and Borneo. Its chief arms are the Gulf of Tongking, protected by the island of Hainan, and the Gulf of Siam.

The south coast.—This coast has three great peninsulas projecting southwards—Arabia, India, and Indo-China, which correspond to three similar peninsulas in Europe.

Between Arabia and India is the Arabian Sea, with its two branches, the Red Sea and the Persian Gulf, the former approached by the Gulf of Aden and the Straits of Bab-el-Mandeb, and the latter by the Gulf of Oman and the Strait of Ormuz. Between India and Indo-China lies the Bay of Bengal, connecting with the eastern seas by the Strait of Malacca, a great ocean highway, on which stands Singapore.

The west coast—These shores are washed, not only by the Red Sea, but also by the eastern end of the Mediterranean Sea, known as the Levant. Here is the important island of Cyprus.

On the north coast the openings are unimportant, as the Arctic Ocean is icebound throughout most of the year.

The seas of the east coast are much more advantageously situated for trade than those of the west. The waters of the former are protected by archipelagos, and the connecting straits

form a direct line of communication between the many ports on the coast. In the latter case trade between the Red Sea and the

FIG 39.—ASIA: RELIEF.



Mediterranean has been facilitated by the construction of the Suez Canal, for the passage of which, however, considerable dues

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are levied, but the Persian Gulf is still cut off from the main trade routes

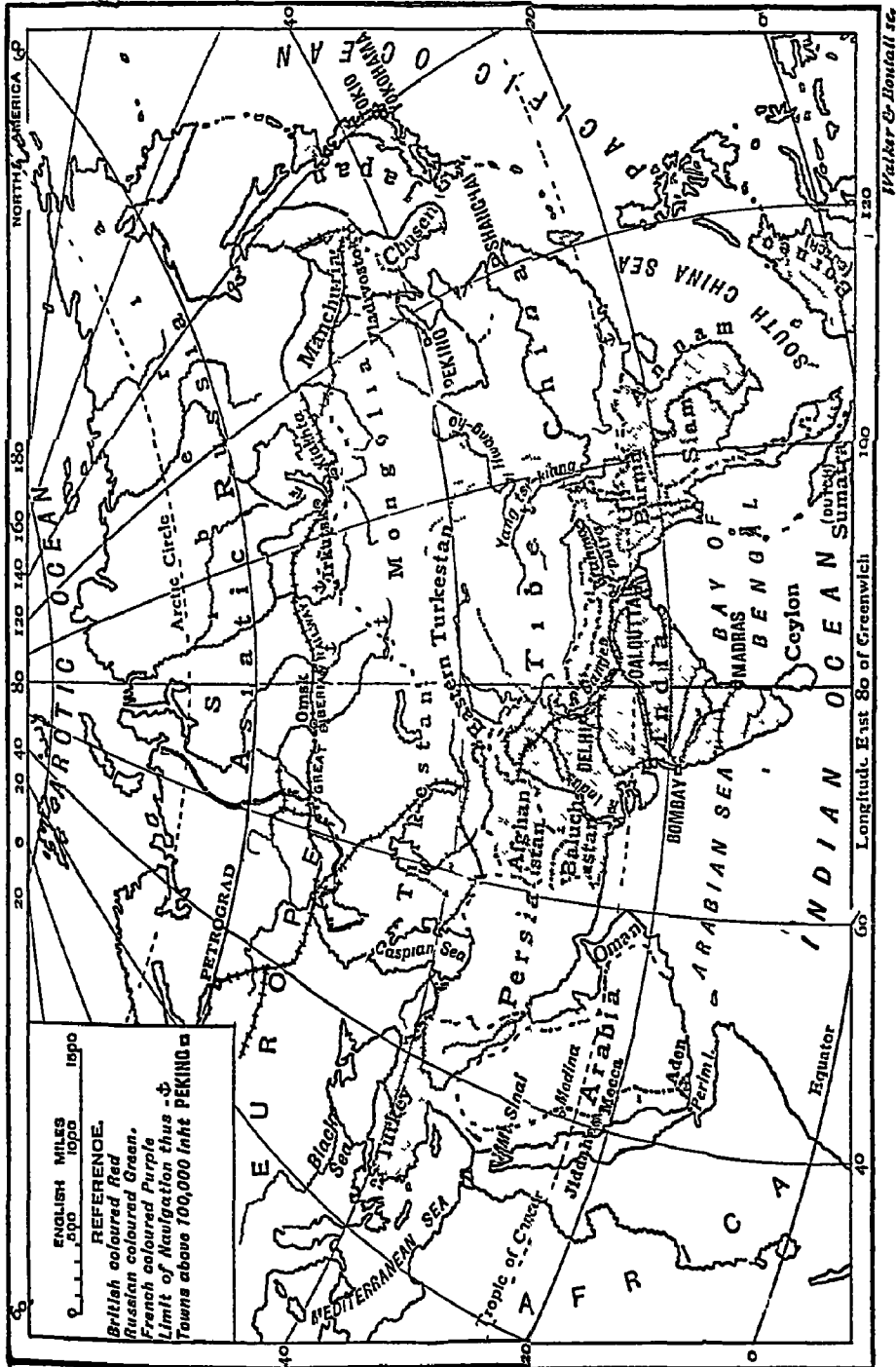
ISLANDS.—We have already noticed the long chain of



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islands off the east coast. Of these by far the most important are the Japanese Islands, which occupy a position to the east of Eurasia corresponding to the British Islands in the west. The

FIG. 41.—ASIA. POLITICAL



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climate of these two groups is similar, that of the former being tempered by the Kuro Siwa current, that of the latter by the Gulf Stream Drift.

The Malay Archipelago lies in the monsoon region at the south-east of the continent, and is the largest collection of islands in the world. The tropical climate and the abundant rainfall account for a luxuriant and varied vegetation which supports a dense population.

The islands possessed by the British, though small, are of great service to the Empire. Perim guards the southern end of the Red Sea, and dominates the Mediterranean-Red Sea route from the east, as Gibraltar does in the west. Hong-Kong, in Chinese waters, is not only a great commercial centre, but possesses great naval and military importance. Ceylon, a Crown Colony and a centre of much trade, occupies, like Singapore, a splendid position on the great ocean highway between east and west.

SURFACE AND RELIEF.—As regards physical structure, the surface of Asia falls into five natural divisions—

1. The Great Plain of the North.

2 The Highlands of the mainland, stretching from east to west, and occupying the central and a large portion of the southern part of the continent

3. The Lowlands and coast plains fringing the highlands on the south and east

4 The Tablelands of Arabia and the Deccan.

5 The volcanic island chain lying off the east coast.

1 The Great Plain of the North occupies a large portion of Siberia, and is continuous with the great plain of Northern Europe. The Ural Mountains, which run north and south near the political boundary between Asia and Europe, hardly break the continuity of the plain, they are of no great elevation, and rise with a gentle slope on both sides

2 Like the plain, the great Highlands of Asia and Europe are continuous. In Asia they consist of a series of plateaux, varying from 3,000 ft in the Plateau of Iran to 14,000 ft in the Pamirs and 17,000 ft in the Plateau of Tibet. This region of highlands is crossed, moreover, by some of the highest mountains in the world, so that the general elevation of the whole area, which comprises about half the continent, is very high. This accounts for the fact that the average elevation of Asia is higher than that of any other continent

The chief centre of elevation is the extensive Plateau of Tibet, lying to the north of the Himalayas. This plateau is unprotected on the north from the cold Siberian winds, and the lofty mountain ranges on the south prevent the access of the warm and rain-bearing winds from the Indian Ocean. These facts, together with its high elevation and its inland position, account for the severity of the climate, which supports a scanty vegetation and a thin population.

North-east of Tibet, and separated from it by a slight depression—the Han-Hai, or Dry Sea of the Chinese, lies the vast Plateau of Mongolia. From this plateau elevated land extends to the Behring Sea.

On the western side of Tibet, the Plateau of Pamir—the ‘Roof of the World’—forms the starting point of the great mountain chains of Asia.

(a) The great double chain of the Himalayas extends to the south-east for 1,500 miles, separating India from Tibet. They contain the most elevated peaks in the world, Mount Everest being 29,000 ft high.

(b) North of the upper course of the Indus are the Karakorum Mountains, with Mount Godwin Austin, 28,250 ft in height. Recent exploration has proved the existence of other very lofty peaks, and it is believed that at least one of these is higher than Mount Everest. The range to the north of the upper course of the Brahmaputra has only recently been explored by Dr Sven Hedin, and the name Trans-Himalaya has been given to it.

(c) The Kuen-lun Mountains extend eastwards, and form the northern border of Tibet.

(d) The Tian-shan Mountains extend to the north-east, and, with the Altai, Yablonoi, and Stanovoi Mountains form a continuous chain stretching to Behring Sea.

(e) The Hindu Kush Mountains run westwards from the Pamirs at the point where the Highlands of Asia are narrowest—only about 300 miles—and form the beginning of a ridge which skirts the Plateau of Irania on the north and terminates on the shores of the Mediterranean Sea.

(f) The Sulaiman Mountains extend southwards, forming the eastern boundary of the Plateau of Irania.

The Plateau of Irania is continuous westwards with the Plateau of Armenia and the mountains of Asia Minor. To the north are two volcanic ranges—the Elburz Mountains, with Mount Demavend, an extinct volcano, 19,000 ft high, and the steep and lofty Caucasus Range, with Mount Elbruz, also volcanic, 18,500 feet in height.

3 The Lowlands and Coast Plains vary in width from a narrow strip south of the Plateau of Irania to broad, fertile, and populous plains south of the Himalayas and in the river valleys of Indo-China and China. The principal of these river plains are Mesopotamia, in the valley of the Tigris and Euphrates, the plain of Northern India, watered by the Indus, Ganges, and the lower course of the Brahmaputra, the plains of Lower Burma, Siam and Cambodia, watered by the Irrawadi, Salwin, Me-nam and

Mekong, and the great plain of China, watered by the Yang-tse-kiang, the Hwang-ho, and the Amur

4 The tablelands of Arabia and the Deccan are separated from the highlands of the mainland by the plains of Mesopotamia and Northern India. The former has an elevation of about 3,000 ft, with a more uniformly level surface than the latter, of which the elevation varies from 1,000 to 3,000 feet

5 The volcanic eastern chain occupies the long line of islands which lock the eastern seas from Kamchatka in the north to the Philippine Islands in the south. The most important and most typical volcano in the chain is Fujiyama, in Japan (12,500 ft)

RIVERS.—The rivers of Asia fall into two great classes—(1) those which reach the open sea, which may be called Oceanic rivers, and (2) those with no visible outlet to the ocean—rivers of inland drainage. The former flow outwards from the mountainous regions of the interior, while the latter are either prevented by mountain ridges from leaving the plateaux, as in the case of the Tarim, or flow below the level of the sea, as in the case of the Jordan

The main watershed of the continent of Asia extends across the great highlands from the Mediterranean Sea on the west, through the Plateau of Pamir to the Behring Sea on the east, it is therefore continuous with the main watershed of Europe. From this watershed the great rivers flow to the north, east, and south.

The rivers of the north flow across the great Siberian plain before emptying themselves into the Arctic Ocean. They are the Ob, Yenesei, and Lena. The physical map on page 80 shows that these rivers have short courses through the mountains and long courses across the plains. Their current is therefore slow, and except when ice-bound, which is the case in the lower courses for several months of the year, they afford excellent inland waterways.

The rivers flowing from the east of the plateau traverse the coast plains before reaching the Pacific Ocean. The chief are the Amur, Hwang-ho, Yang-tse-kiang, and Si-kiang. These rivers have long courses in the mountains as well as on the plains. They carry down large quantities of silt, which fertilise the coast lowlands, and are hence an important factor in the extraordinary density of the population of this region. The

current of the Hwang-ho is more rapid than those of the other three rivers, and, unlike them, it is not useful for navigation. The Yang-tse-kiang, one of the longest rivers of Asia, is navigable for 1,000 miles from its mouth, and with its tributaries forms the finest network of waterways in the world.

The most important rivers rising to the south of the plateau are the Me-kong, Salwin, and Irrawadi in Indo-China, the Brahmaputra, Ganges, and Indus in Northern India, and the Tigris and Euphrates in Mesopotamia. These rivers vary very much in usefulness and importance. They all act as fertilising agents, bringing down silt, which has built up the plains through which they flow. The Me-kong and the Salwin are too rapid for navigation, but the Irrawadi is the great natural highway of Burma. The Brahmaputra is of little use in its mountain stage, but it carries much of the trade of Assam, and the Ganges is navigable as far as Hardwar. The Indus receives its tributaries in the Punjab, but in its passage through the desert it is of little value either for traffic or irrigation. The Tigris and Euphrates once fed an elaborate system of canals which irrigated the then populous country of Mesopotamia. The irrigation works were, however, allowed to fall into decay, and the prosperity of the valley at once declined.

RIVERS OF INLAND DRAINAGE—Asia is remarkable for the large number of its rivers which find no outlet to the sea. These rivers are found in depressions (*a*) in the south-western portion of the Great Northern Plain and (*b*) in various parts of the plateaux. The inland rivers of the Plain drain into three great lakes—the Caspian Sea, the Sea of Aral, and Lake Balkash. Two rivers from the north flow into the Caspian Sea—the Ural from the Ural mountains, and the Volga, the longest river of Europe. Two rivers flow into the Sea of Aral. These are the Sir and the Amu, which rise on the plateau, and flow with a general direction to the north-west, helping to fertilise the steppe lands of Russian Turkestan. The Amu is 1,500 miles long, about equal to the length of the Ganges, and the Sir is only 150 miles shorter. Into Lake Balkash flows the Ili, which rises in the Thian-shan Mountains, and flows for most of its course along the northern slopes of the plateau.

The most noteworthy of the inland rivers of the plateaux is

the Tarim, which occupies the depression between the Thian-shan and the Kuenlun Mountains. This river has a length of 1,700 miles, only 100 miles less than the Indus, but on account of the deficient rainfall and the dryness of the atmosphere, which occasions considerable evaporation, its flow is irregular and its volume inconstant. It flows into the Lob-nor.

On the eastern and lowest part of the Plateau of Irania is a series of swamps of which the largest is known as Lake Hamun. Into this lake flows the Helmand River, which derives its waters from the snows and glaciers of the mountains of Afghanistan.

In Armenia and Asia Minor many streams flow into salt lakes, but the most remarkable river in this part of Asia is the Jordan in Syria, a small stream which occupies the lowest valley on the land surface of the globe. It drains into the Dead Sea the level of which is 1,300 feet below that of the Mediterranean.

The valley of the Jordan is the beginning of a "rift" in the Earth's surface which is continued along the bed of the Red Sea, and the depression east of Abyssinia into the lake district of Equatorial Africa.

Many of the rivers of Asia are of great length. The Yenesei and the Yang-tse-Kiang are about 3,200 miles long, the Amur and the Lena 3,000 miles, the Ob, Hwang-ho, and Me-kong more than 2,000 miles, the Brahmaputra and the Indus 1,800 miles, and the Ganges 1,500 miles in length. But the longest rivers of three continents, exceed in length and volume the greatest rivers of Asia. The Missouri-Mississippi of North America, and the Amazon of South America, which sweep across the vast plains of those continents, are each more than 4,000 miles long, and the Nile in Africa is 3,500 miles in length. The Volga and the Murray, the longest rivers in Europe and Australia, are 2,200 and 2,350 miles long respectively, or less than the Hwang-ho.

LAKES.—Like the rivers, the lakes of Asia are of two kinds, viz. those which have no outlet to the sea and are salt, and those which are drained by rivers and are fresh (see page 41). Of these the first kind are much more numerous and important.

The largest lakes of Asia are in the depression to the south-west of Siberia. This depression is a part of the bed of a great sea which once extended from the Black Sea to the Arctic Ocean, and this further accounts for the salinity of its lakes. The Caspian

Sea is the largest lake in the world, having an area nearly seven times that of the island of Ceylon. It occupies the lowest part of the depression, its surface being 84 feet below the level of the Black Sea. The Sea of Aral and Lake Balkash are the other great lakes of this area, the former of which is gradually decreasing in size, owing to the silting up of its bed by the rivers which flow into it, and to the evaporation of its waters, which a scanty rainfall fails to renew.

Other salt lakes are Lob-nor, L. Hamun, and the Dead Sea, mentioned above in connection with the rivers, and Tuz Gol and Lake Van on the Armenian Plateau.

The largest freshwater lake is Lake Baikal, probably the deepest lake in the world. It is drained by the Angara, a tributary of the Yenesei. Lake Gokcha on the Armenian Plateau, which drains into the Caspian Sea, and Wulur Lake in Kashmir, formed by a widening of the River Jehlam, are the only freshwater lakes of note.

CLIMATES AND RAINFALL—As the continent of Asia extends from the North Pole to the Equator every variety of climate is experienced. The latitude is, however, a very uncertain guide to the climate of any particular region, for local influences frequently cause considerable modifications in the climate of places on the same latitude. The chief of these influences in Asia are—

- 1 The elevation of the interior, which makes a great portion of the continent colder than it would otherwise be.
- 2 The general direction of the mountain chains from east to west, which prevents the passage of the cold north winds southwards and the warm south winds northwards.
3. The monsoon winds, which account for the rainfall of India and South-Eastern Asia.
4. The slope of the land from the interior towards the Arctic Ocean, i.e. away from the sun, which renders the greater part of Siberia cold and unproductive.
- 5 The compactness of the continent, which removes much of the interior from the influence of sea-breezes, and accounts for the generally deficient rainfall.

Asia may be divided into four great climatic regions—

1. The Northern Region.

2. The Desert Regions
- 3 The Mediterranean Region
- 4 The Monsoon Region

THE NORTHERN REGION—That portion of Siberia which borders the Arctic Ocean is for several months extremely cold, and being inaccessible to any rain-bearing winds it has hardly any rainfall. During the long winter the rivers are entirely covered with ice and the ground is frozen to a depth of several feet, but during the long days of the short summer, when the ice melts, and the thawing of the snows and glaciers of the central highlands causes the rivers to overflow, the ground becomes swampy and a vegetation of mosses and lichens begins to grow. These desolate plains are called *tundras*, and they are found in all the three continents whose lands border the Arctic Ocean.

South of the tundras is a lowland belt of an entirely different character. Here the winters are still severely cold, but owing to the higher altitude of the sun and the dryness of the atmosphere, the summers are much milder. This is the forest belt, with evergreen cone-bearing trees in its northern, and deciduous trees in its southern, zone. This part of Siberia is an area of extremes of temperature. At Yakutsk there is a difference of more than 100° F. between the summer and the winter temperatures. See maps, p. 90.

In the south-west of Siberia the winters are still long and cold, but the summers are short and hot, and the climate very dry. Here trees cannot grow, but when, in spring, the sun melts the snow which has covered the ground during the winter, the vast plains become green with pasture, and in the river valleys grain crops are cultivated. This region is called the *Steppes*, the best known of which is the *Kirghiz Steppe*, between the Sea of Aral and Lake Balkash.

THE DESERT REGIONS—In the vicinity of the tropics of Cancer and Capricorn two belts of calms encircle the globe, and here rainfall is generally deficient. In these latitudes therefore, many of the great deserts of the world are to be found. The chief desert of the northern tropic is the Sahara in Africa, which is continued in Asia across Arabia, Persia, Afghanistan and Baluchistan to the Sind and Thar Deserts in India. These dry lands give out their heat during the night as rapidly as they absorb it during the day, and while the days are hot, it becomes very cold at night. This causes a constant expansion and contraction of the rocks, which in time breaks them up and converts them into sand, hence the deserts of the tropics are mostly sandy wastes.

But the elevation and rainless character of much of the interior of Asia accounts for the existence of many other desert areas which resemble the cold tundras of the north more than the hot deserts of the south. The chief of these are Tibet and the Desert of Gobi, whose mountain walls deprive the prevailing winds of their moisture before they penetrate into the interior.

FIG 41a—ASIA SUMMER RAINFALL JUNE TO AUGUST

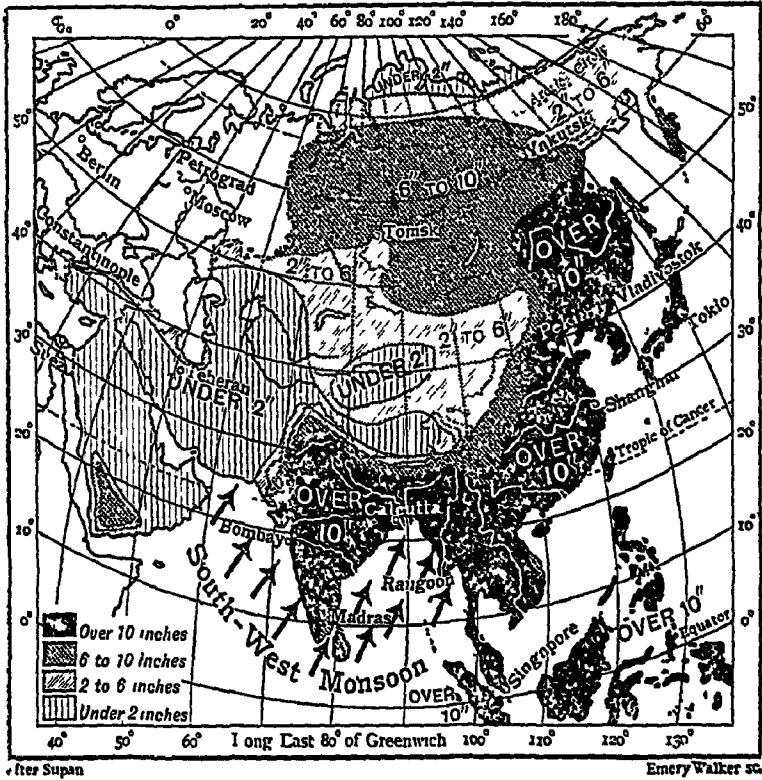


FIG 41b—ASIA WINTER RAINFALL DECEMBER TO FEBRUARY

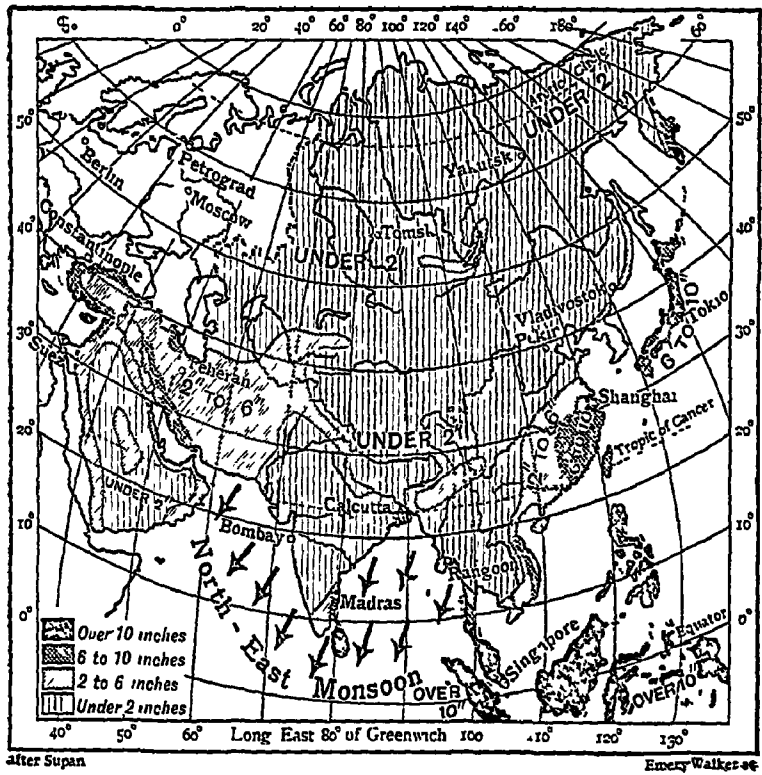
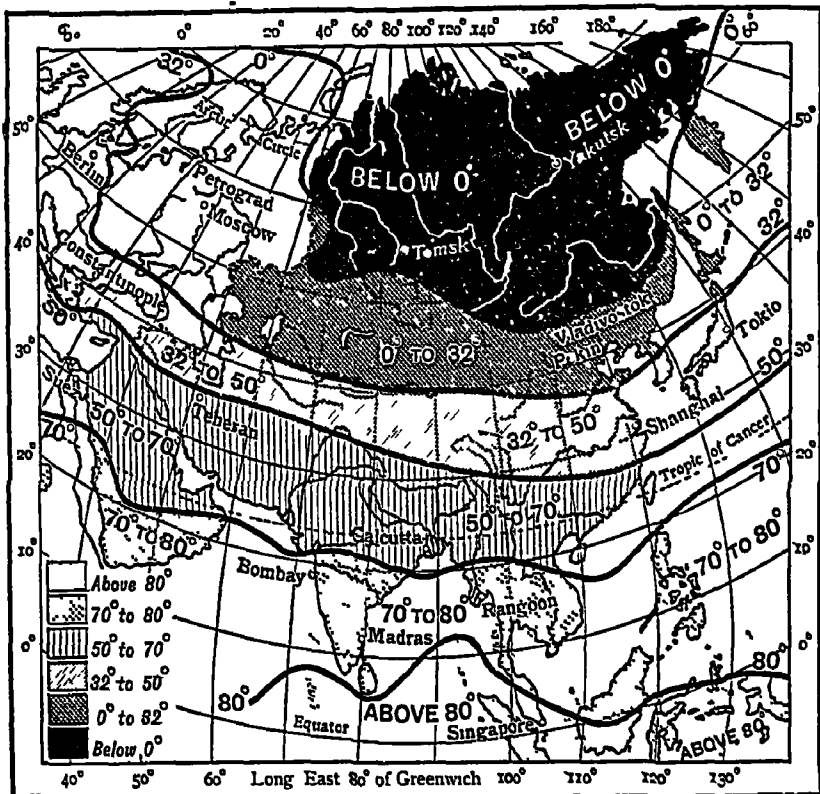
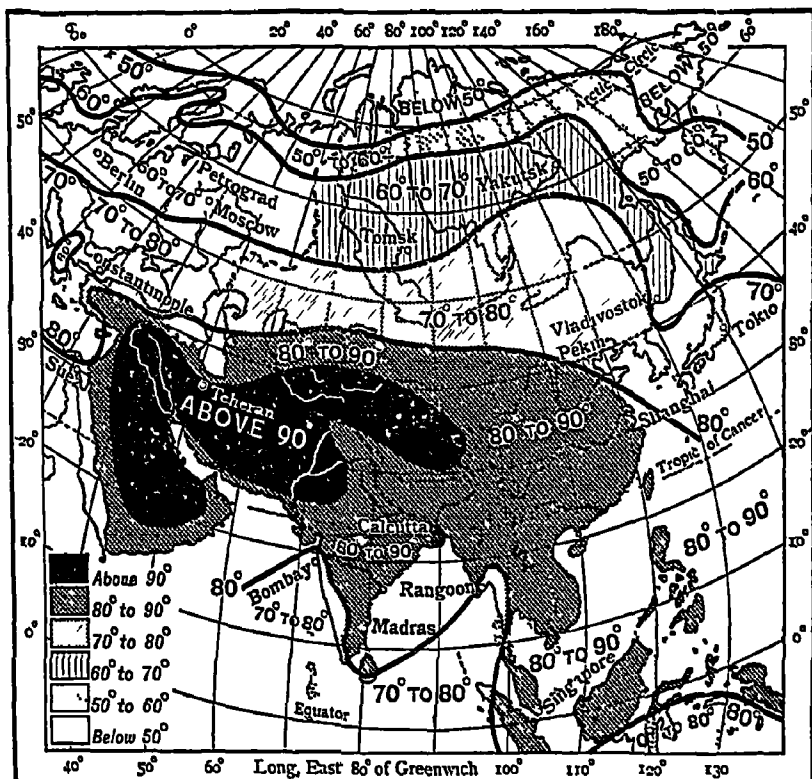


FIG 41c.—ASIA JANUARY ISOTHERMS



Emery Walker, sc.

FIG 41d.—ASIA JULY ISOTHERMS.



Emery Walker, sc.

Another desert occupies the low-lying region to the east of the Caspian Sea, and is called the Desert of Turan. It merges into the steppes on the east.

These deserts are by no means uninhabited. In all parts there are isolated streams and lakes which are the mainstay of a scattered population, while where the water supply is constant towns spring up, forming links in the chain of communication and trade routes across barren and inhospitable countries. These oases are often the centres of keen cultivation and simple manufacturing industry.

THE MEDITERRANEAN REGION—The countries which encircle the Mediterranean Sea in the south of Europe, the north of Africa, and the south-west of Asia form a distinct climatic region. The proximity to the sea causes the climate to be equable and moist, and the latitude renders it mild both in winter and summer. The part of Asia belonging to this region includes Asia Minor, Syria and Palestine on the coast and Armenia, Transcaucasia, a part of Persia and Mesopotamia further inland. As we proceed from the sea towards the interior the height increases and the rainfall diminishes. The climate therefore becomes more extreme, and the Mediterranean region merges almost imperceptibly into steppe-lands near the Caspian Sea, and into desert in Arabia and Persia.

THE MONSOON REGION—This region extends over the whole of the south-eastern border of the continent from the Arabian Sea to the Japan Islands, and is chiefly characterised by a definite rainy season corresponding to the summer solstice when the sun draws up the rain-bearing trade winds from the Indian and Pacific Oceans. These wet winds are deprived of their moisture by the mountains of the great highlands, and consequently the influence of the monsoon is not felt in the interior of the continent. The chief countries of this region are the Indian Empire, the Indo-China peninsula, the Malay Archipelago, the eastern portion of the Chinese Empire, and the Japan Islands. In the tropical countries the summers are very hot, but further north the winters are cold, and everywhere efforts have to be made to obtain the maximum benefit from the abundant rainfall of the short rainy season.

Irrigation.—The uncertainty of the rainfall in Asia accounts for the irrigation works which have to be resorted to in nearly all parts of the continent. In no part of the world, except perhaps in Australia, is the need for irrigation more keenly felt than in Asia. Remains of ancient systems of irrigation are to be seen in various parts, particularly in Mesopotamia and Siam, where the Euphrates and Tigris and the Me-kong supplied the water for numerous canals.

From east to west irrigation is still practised. In the hilly regions of Japan and China and on the mountains of India terraced cultivation is carried on, the tiny hill-streams being conducted along channels, often for very long distances. Most of the rivers of India, and particularly the Indus, provide water for what is perhaps the greatest system of canals in

the world The rivers of Turkestan are also utilised in the same way In Persia and Baluchistan an ingenious method of irrigation is employed The water is conducted along underground tunnels, called karezes, into which openings are made at intervals for the removal of the water. Wells and tanks are used in most parts of the continent

PRACTICAL EXERCISES

- 1 What is the cause of the great rainfall in S E Asia ?
- 2 What is the summer rainfall of countries through which the meridian of 80° passes ? See map, p 89
3. What are the physical conditions that determine the low summer rainfall of Tibet ?
- 4 What effect has the N E monsoon upon the climate of India ?
- 5 Explain the causes of the low winter temperature of Siberia.
- 6 In what ways does the position of the Himalayas affect the winter and summer climate of India ?
- 7 How do you account for the irregularity of the isotherm of 80° in map fig 41c ?
- 8 What are the causes of the great summer heat of Arabia and Persia ?
- 9 The summer temperature of Calcutta ranges from 80° to 90° , and the winter temperature from 50° to 70° , whereas in Madras there is little difference between the July and January temperature How do you explain this ?
- 10 Draw the winter isotherm of 32° through Asia and continue it through Europe In Asia it nearly follows the parallel of 40° N lat, whereas in Europe it reaches north of 60° What is the cause of this great difference ?

VEGETATION—The areas of characteristic vegetation follow the climatic regions very closely

1 The northern region divides into two as regards vegetation, viz the tundras of the Arctic coast and the forest area further south The mean temperature of the tundras in the depth of winter is equal to 60° of frost, and the ground is frozen hard, but in summer the mean temperature is between 50° and 60° F (compare with the winter temperature of North India), and then the ice thaws and the rivers overflow, turning the surface soil into a swamp In such conditions only those plants thrive as can survive hard winter frosts and require little depth of earth, such as mosses, lichens, stunted bushes, and certain flowering plants.

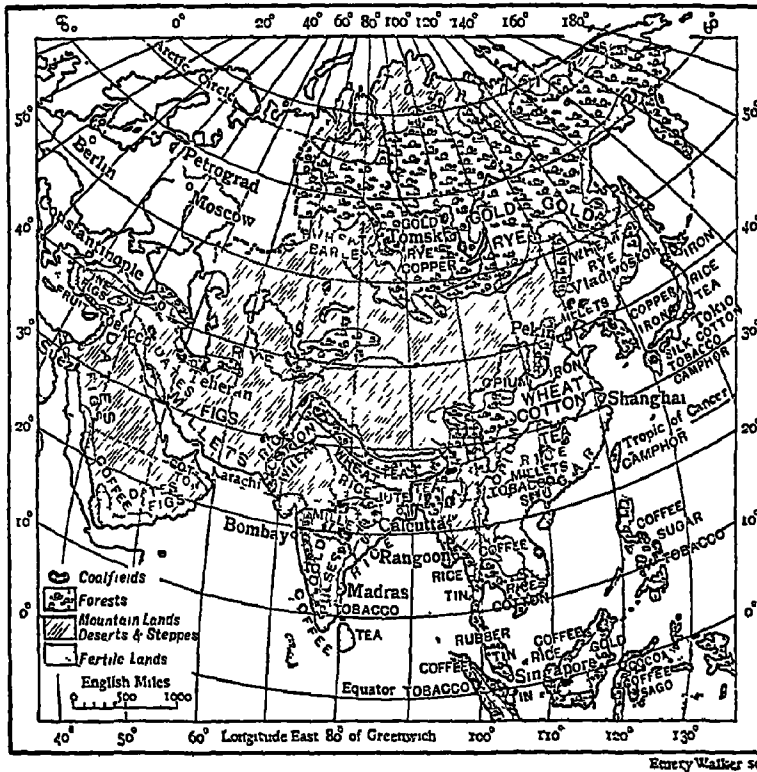
The forest belt stretches right across the continent to the south of the tundras, and has cone-bearing trees in its northern portion and deciduous trees further south These forests have not yet become commercially important owing to the absence of ready means of transport, the rivers of the forest area draining northwards into the Arctic Ocean Towards the edge of the plateau, where the climate is milder and the land fertile, grains, like wheat, are possible and are being increasingly grown

2 The desert areas of Asia have been divided into two classes—the elevated deserts of the interior and the tropical deserts of the south. The

former consist of dreary wastes covered with snow in winter, and having very sparse vegetation on which the yak, the chief animal, finds a precarious existence. Along the river valleys, where flourishing oases exist, grains and fruits are cultivated. These deserts merge into steppe lands—rolling plains of pasture during the summer and barren wastes in the winter.

The tropical deserts of the south-west are mostly sandy, and produce prickly shrubs on which camels feed. Wherever water is found oases spring up, and the date palm and gum-yielding plants flourish. In Yemen,

FIG 41e—ASIA VEGETABLE AND MINERAL PRODUCTS.



in the south-west of Arabia, coffee of the finest quality is produced, and where irrigation is possible—*e.g.* Quetta—fruit and grains are grown.

3 The vegetation of the lands bordering the Mediterranean Sea is characteristic, and the Mediterranean types of vegetation are found in Asia, from Asia Minor to Persia. Fruits are important. The vine is grown and wine manufactured, and grapes, figs, olives, oranges, and other varieties are exported, either fresh or dried. The oranges of Jaffa, the figs of Smyrna, and the wine of Shiraz are noted. The chief cereals are wheat, barley and millets, and cotton and tobacco are cultivated. The mulberry tree supports the silkworm, and the highlands of the interior are clothed with pines, cedars, and other trees.

4 The most luxuriant and varied vegetation in Asia is found in the monsoon region. The products vary very much according to altitude and latitude, and according to location inland or near the sea. Of cultivated crops the most important is rice, which is grown in flooded fields in all the coast lands from India to Japan. It is not only one of the staple foods of the people of the East, but a large surplus is available for export. Other cereals are maize and millets, which are widely distributed, and wheat and barley are extensively grown in China, Japan, and the North of India. The monsoon lands are the greatest tea producers in the world, where the well-watered slopes of the Himalayas, the Western Ghats, Ceylon, China and Japan are well drained, and the soil is suitable for its growth. Oilseeds, jute, tobacco, indigo, the opium poppy and sugar are grown very largely in India, giving rise to important industries. Coffee thrives in South India and in the Malay Archipelago, the East Indies being also the world's chief source of spices and sago. The forests of the monsoon area are very dense and provide valuable timbers. On the Himalayas are deodars and other cone-bearing trees, and Burma and the Deccan produce teak, and fancy woods such as ebony and sandalwood. The rubber tree is being successfully grown in Ceylon, Assam, and Burma, and Ceylon also produces cinchona and the coconut palm. The East Indian Islands have forests of great economic value, and the mulberry tree supports the silk industry of India, China, and Japan.

ANIMALS.—As Asia extends from the Equator to the Arctic Circle, it exhibits a great variety of animal life.

In the Northern Region the forests furnish shelter for numerous wild animals, which are protected from the cold by thick furs, for the sake of which they are hunted. Some of the principal of these are the bear, the Arctic fox, the squirrel, sable and marten. The only beast of burden in the far north is the reindeer, which is also the chief source of wealth of the inhabitants of the Tundras, providing milk and flesh for food, as well as skins for clothing.

In the Central Highlands are to be found many varieties of domestic animals. Sheep and goats furnish wool and hair for the making of fabrics and carpets, while cattle provide milk and butter and are used for ploughing and for other draught purposes. Of transport animals, the yak is used in Tibet and on the plateaux, the camel or dromedary in the deserts, and the horse on the steppes. This area is also the home of the wild ass.

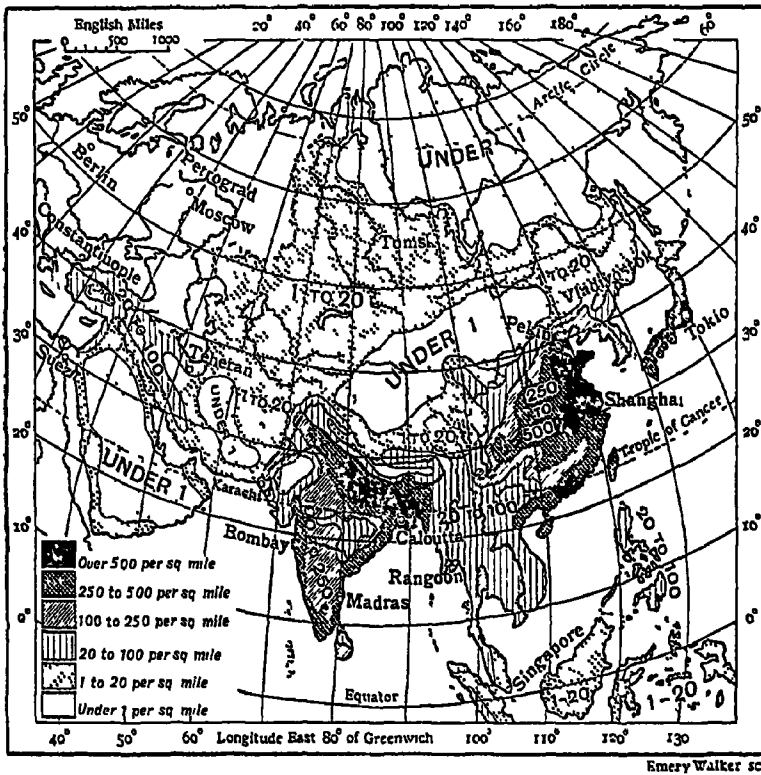
South western Asia is famous for its fine breed of horses, of which the finest are found in Central Arabia and in Mesopotamia. In the hot deserts the camel is employed as an animal of transport, and the ostrich is found in Arabia.

The animal life of the monsoon area is almost as varied as its vegetation. The thick forests and jungles are the home of many wild animals, such as the elephant, rhinoceros, tiger, panther, jackal, and monkey, also of

gorgeously plumaged birds, lovely insects, and dangerous reptiles, while the crocodile lives in the rivers. The elephant is used as a beast of burden, chiefly in Burma and Siam, and the ox and buffalo are employed for draught purposes and ploughing all over this region.

PEOPLE—The line of mountains stretching from the Himalayas to the Caspian Sea broadly divides the two great types which people Asia. North of this line live the Mongolian or yellow type, of whom the Chinese are the most numerous group; while south of it the people are of the Caucasian or white type,

FIG. 41f.—DENSITY OF POPULATION



varying in complexion from white in Caucasia to brown in India.

PRACTICAL EXERCISES

1. How do you account for the great density of population in India and China?
2. What parts of Asia are most thinly inhabited, and why?
3. What are the great food products of Asia, and where are they grown?
4. Draw a sketch map of Southern Asia and show the districts where rice and tea are grown.
5. Following the meridian of 100° E Long from north to south, describe the general character of the country through which it passes.

Religions—The three great religions of Asia are Brahmanism, Buddhism, and Muhammadanism.

1. Brahmanism (or Hinduism) is confined to India.

2. Buddhism, which originated in India, now prevails in the Chinese Empire, Japan, Indo-China, Burma, and Ceylon. The great Lamas (Buddhist priests) live in Tibet.

3. Muhammadanism had its origin in Arabia, and spread north, west, and east. It is the religion of South-west Asia, and has many adherents in India, the north of China, and the Malay Archipelago.

The majority of the Chinese observe ancestor-worship, a debased form of the religion of Confucius.

Political Divisions—Nearly three-quarters of the surface of Asia is occupied by the three great empires—the Russian, the Chinese, and the Indian. These 'three empires meet' on the plateau to the north-west of India.

The island empire of Japan in the Far East has justified its inclusion among the Great Powers of the world.

In the Indo-Chinese peninsula, Siam, an independent state, lies between French territory on the east and British on the west.

The East Indian Islands are largely in the hands of the Dutch. The Philippine Islands belong to the United States of America.

In the west of Asia, Turkish territory is continuous with the Sultan's dominions in Europe. The Muhammadan states of Persia and Afghanistan and a large part of Arabia are independent.

On the whole, foreign influence may be said to have penetrated less into Asia than into any other continent except Europe.

THE COUNTRIES IN ASIA, WITH THEIR CAPITALS

<i>Country</i>		<i>Capital</i>
Siberia	Russia in Asia	Omsk and Irkutsk
Russian Central Asia		Tashkent
Caucasia and Armenia		Tiflis
Asia Minor	Turkey in Asia	Smyrna
Syria and Palestine. . . .		Damascus
Mesopotamia		Bagdad
Arabia		—

Tarsus			Teneran
Afghanistan	}	Irania	Kabul
Baluchistan			Kelat
India			Delhi
Burma			Rangoon
Siam	}	Indo China	Bangkok
Malay Peninsula			Singapore
French Cochin China	}	Tongking, Annam	Saigon
Malay Archipelago			Batavia
China			Peking
Chusen [to Japan]			Seul
Tibet			Lhasa
Japan			Tokio

EXAMINATION PAPERS

- A 1 Give the area and population of Asia. Where is the population densest, and why is it so?
- 2 Mention the principal plateaux of Asia, with their situation.
- 3 Why is the surface of the plateaux largely composed of deserts? Give the names and situation of the more extensive wastes.
- 4 Give the location of the principal water-parting of Asia.
- B 1 Name the five main mountain ranges which radiate from the Pamir.
- 2 What lowland plains are situated in Southern Asia?
3. Mention the islands of Eastern Asia, and say what seas they enclose.
- 4 What straits and seas would a vessel pass through in a journey from the Sea of Okhotsk to the Bay of Bengal?
- C 1 Where are the Tundras, Han-hai, Hainan, Tian-shan Mountains, Plateau of Iran, Cape Lopatka, and the Maldivé Islands?
- 2 What causes South-eastern Asia to be so productive? Mention some of the principal products.
- 3 What are the characteristic features of the main climatic regions of Asia?
- 4 Give the chief rivers rising in the plateau of Tibet and state into what seas they flow.
- D 1 Mention the situation of the principal lakes of Asia, and say what rivers flow into or out of them.
- 2 Compare the countries separated by the Himalayas as regards their inhabitants and climate.
- 3 Compare the rainfall of South-eastern and South-western Asia, and account for the difference.
- 4 What foreign Powers have possessions in Asia, and where are their territories situated?

THE INDIAN EMPIRE

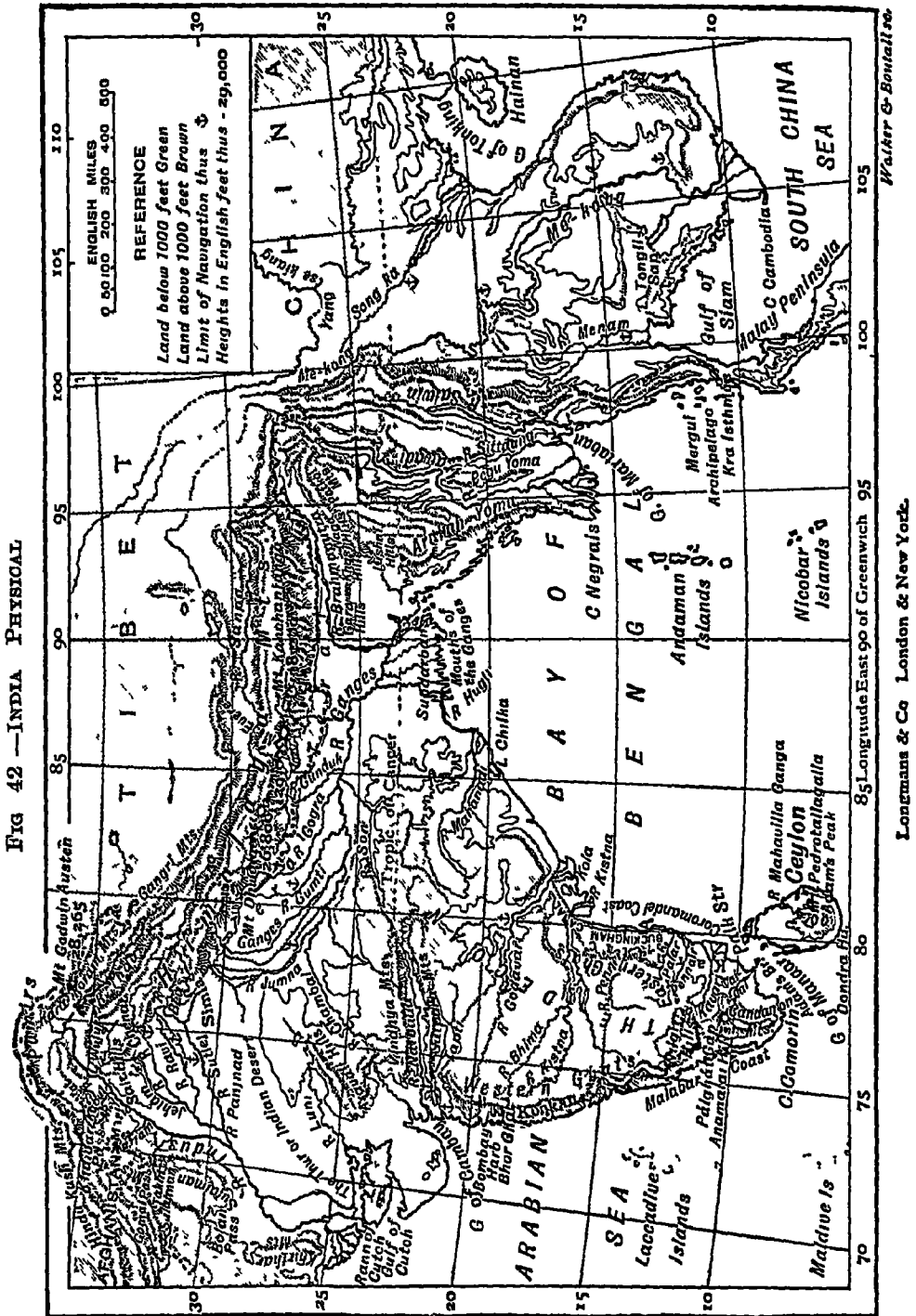
India has been called 'the fairest jewel in the British Crown,' and in many ways the metaphor is an apt one. Her natural advantages are numerous: she is compact and self-contained; her frontiers are natural barriers; the climate is milder than that of most other countries in the same latitude; the soil is, on the whole, wonderfully fertile; and the productions are abundant and of great variety. In point of population the Indian Empire is the second country in the world. More than a quarter of the world's inhabitants belong to the British Empire, and of these three-quarters are in India; moreover, the people of India are probably the most advanced of all the races who inhabit the Tropics.

When Great Britain first obtained sway in India the country was torn with internal strife. Little by little, harmony has taken the place of discord; the people have settled down to habits of industry and self-improvement, agriculture is making progress; education, arts and industries are making rapid headway, a network of railways covers the country; canals are being constructed; forests are preserved, and India is fast taking her place amongst the commercial nations of the world.

The Indian Empire of to-day is the result of gradual growth. From a collection of separate kingdoms, in which unity was practically unknown, has developed a single empire, under one central authority, of which the parts are bound together by national ties.

POSITION AND SIZE.—The Indian Empire occupies a position of great advantage, almost at the centre of the Eastern Hemi-

sphere, and at the head of the Indian Ocean, so that her trade routes radiate in all directions—westwards for Europe and the



British Isles; south-west for South Africa; south for Ceylon; and south-east for Australia and the Far East.

It occupies the whole of the central triangular peninsula on the south coast of Asia, and a considerable portion of the eastern peninsula. It stretches inland as far as the great Himalayan ridge on the north, Persia on the west, and to within 300 miles of the Pacific coast on the east. It thus extends over 40 degrees of longitude and 30 degrees of latitude, or 2,000 miles from north to south, and 2,500 miles from east to west. In area it is about 1,800,000 sq. miles, or nearly one-sixth of the whole British Empire.

BOUNDARIES.—The Indian Empire is remarkable for its natural boundaries. The land boundary consists of lofty mountain chains, highest along the north, where the Himalaya Mountains have proved an effectual dividing line between the Mongolian and Aryan races. On the east the Assam and Burmese Mountains have not prevented the Mongolian from finding his way into Burma, and the passes of the Hindu Kush, Sulaiman, and Khirthar ranges of the north-west have been the routes of many invading armies in past ages.

The name of the country—India—was probably given to it by these invaders. The first great check they encountered in their march was the river Indus or Sind (Sanskrit *sindhu* = a river or flood). This name, of which the Greek form is India, and the Persian is Hindu, came thus to be applied to the country beyond (Hindustan or India) and to the people inhabiting it (Hindus).

The desert plateau to the west of Baluchistan completes the natural land boundaries of the Empire.

The sea boundaries are the Bay of Bengal on the east, and the Arabian Sea on the west. The small number of good harbours on both these coasts renders them as safe boundaries as the mountainous land boundaries. The land and sea boundaries are about equal in length.

COAST-LINE.—The chief characteristic of the coast-line of India is its lack of indentations, and although about 5,000 miles in length, it has only four openings of importance into the land. These are the Rann of Cutch and the Gulf of Cambay on the west, the Gulf of Manaar between India and Ceylon, and the Gulf of Martaban in Lower Burma. It is also remarkable that

only one of these, the last named, is useful for commercial purposes. The Rann of Cutch is so shallow that it is not always entirely covered with water. There is no good harbour on the Gulf of Cambay, the former trade of Surat having been transferred to Bombay. The Gulf of Manaar is very shallow at its northern end, where Adam's Bridge is becoming more and more a connecting link between Ceylon and the mainland. The port of Rangoon is approached by the Gulf of Martaban.

The west coast of India differs considerably from the east; the former, or Malabar coast, is more rocky, and the coast strip between the mountains and the sea is narrow. The shore also shelves down more steeply, and consequently there are a few good harbours, particularly those of Bombay, Goa, and Cochin. The harbour of Karachi has to be protected by a breakwater. The eastern or Coromandel coast is low, and a much wider plain, known in the south as the Carnatic, lies between the sea and the Eastern Ghats. The beach generally slopes down very gradually, and the coasts are therefore very much surf-beaten. The only important harbour on this coast—Madras—has been constructed at enormous expense.

The coasts of India are singularly free from islands, Ceylon and a few islets at its northern extremity being the chief. The coast of Burma, on the other hand, is broken by small islets, the Mergui Archipelago being at the extreme south. The Laccadive and Maldive Islands are groups of coral atolls lying well away from the coast of India in the Arabian Sea, and the Andaman and Nicobar Islands in the Bay of Bengal form part of a submarine ridge which sweeps from Cape Negrais to the East Indian Islands.

Geological History.—In very remote ages India presented a very different appearance from what it bears now. Geologically, the Deccan is the oldest part of the country, and when the regions occupied by the Himalayas, the great plain, and parts of Burma were a vast marine bed, the Aravalli Hills and the Vindhya Mountains occupied their present position and the Deccan was a low plain. In those very early ages this region was but slightly connected, through Bengal and Assam, with the Asiatic continent; but, on the other hand, there is abundant evidence to show that a continental connection with South Africa existed, the only

remaining traces of which are the Seychelles Islands and Madagascar. The Arabian Sea was then a great inland sea stretching as far as Tibet and Assam.

The first important change to occur was the uplifting of the

FIG 43 — RELIEF MAP OF INDIA
Copied from Phillips' Model Atlas (by permission)



Deccan plateau by volcanic agency, then the shrinkage of the Earth's crust caused the Himalayas to be folded up, and finally the great plain of Northern India began to emerge above the sea. But while India was becoming more and more a part of Asia, the Indo-African continent was gradually subsiding, and eventually

the two sections of the Indian Ocean rolled into one, a submarine plateau marking the locality of what had formerly been a continent of no mean dimensions.

RELIEF.—The surface of the Indian Empire is divided naturally into four well-defined parts —(1) the mountain region of the north ; (2) the great river-plain of the Indus, Ganges, and Brahmaputra ; (3) the plateau of the Deccan ; and (4) Burma. Each of these regions has its own physical characteristics.

1. THE MOUNTAIN REGION OF NORTH INDIA

MOUNTAIN RANGES.—The great mountain system of the north of India springs from the Plateau of Pamir to the north-west of Kashmir

1. To the south-west run the **Hindu Kush Mountains**, which are continued in the **Sulaiman Range** and the **Khirthar Mountains**. The average height of these ranges is barely 6,000 ft., but **Takht-i-Sulaiman**, the highest peak, is about 11,500 ft. in height. Several passes cross these ranges, and are important trade-routes across the frontier. The chief are the **Khaibar** (3,400 ft. at its highest point), which accounts for the existence of the town of **Peshawar**; the **Gumal**, which is the route from **Dera Ismail Khan**; and the **Bolan** (5,800 ft. at the highest point), leading from Persia, through **Quetta** to **Shikarpur** in **Sind**.

The northern end of this chain receives a good supply of rain, and its valleys are well watered and fertile, but south of **Takht-i-Sulaiman** it enters the rainless belt, and from here to the sea the mountains are barren and rocky, incapable of supporting life of any kind beyond a few stunted shrubs.

These facts account for the habits of the tribesmen along these ranges. In the northern section the people live in villages and follow an agricultural life, producing grain and fruit, which flourish in the temperate climate. In the southern section wandering tribes eke out an existence,—on the oases of the plateau in the summer, when the temperature, owing to the elevation, is moderate, and in the winter, when the dryness of the atmosphere in **Baluchistan** causes severe frosts, they migrate to the plains of **Sind**. As many as 60,000 camels have thus passed in a few days at the end of the summer through the **Bolan Pass** alone.

2. To the south-east runs the great mountain belt of the **Himalayas** ('the abode of snow'—Sanskrit, *hima*, frost; *alar*, a house). The main system consists of two parallel ranges which sweep in a curve, 1,500 miles in length, along the entire northern boundary of India. Kashmir State is practically covered with mountains, but along its northern boundary runs the **Karakorum Range**—short but lofty. The average height of the system is probably over 18,000 ft. The loftiest peaks in the world are found in the Himalayas. Mount Everest (Gaurisankar) reaches 29,000 ft, Kanchinjunga 28,200 ft, and Dhaulagiri is over 26,800 ft. in height. At its western end, the highest peaks are over 25,000 ft. in height, Nanga Parbat is 26,600 ft. high, and Nanda Devi, further east, a thousand feet less. The Karakorum Mountains are not less lofty, Mount Godwin Austen being 28,250 ft. above sea level.

South of the Himalayas and at no great distance is the low **Siwaliks Range**, separated by a long valley known as the **Dun** in the west and as the **Mari** in Nepal.

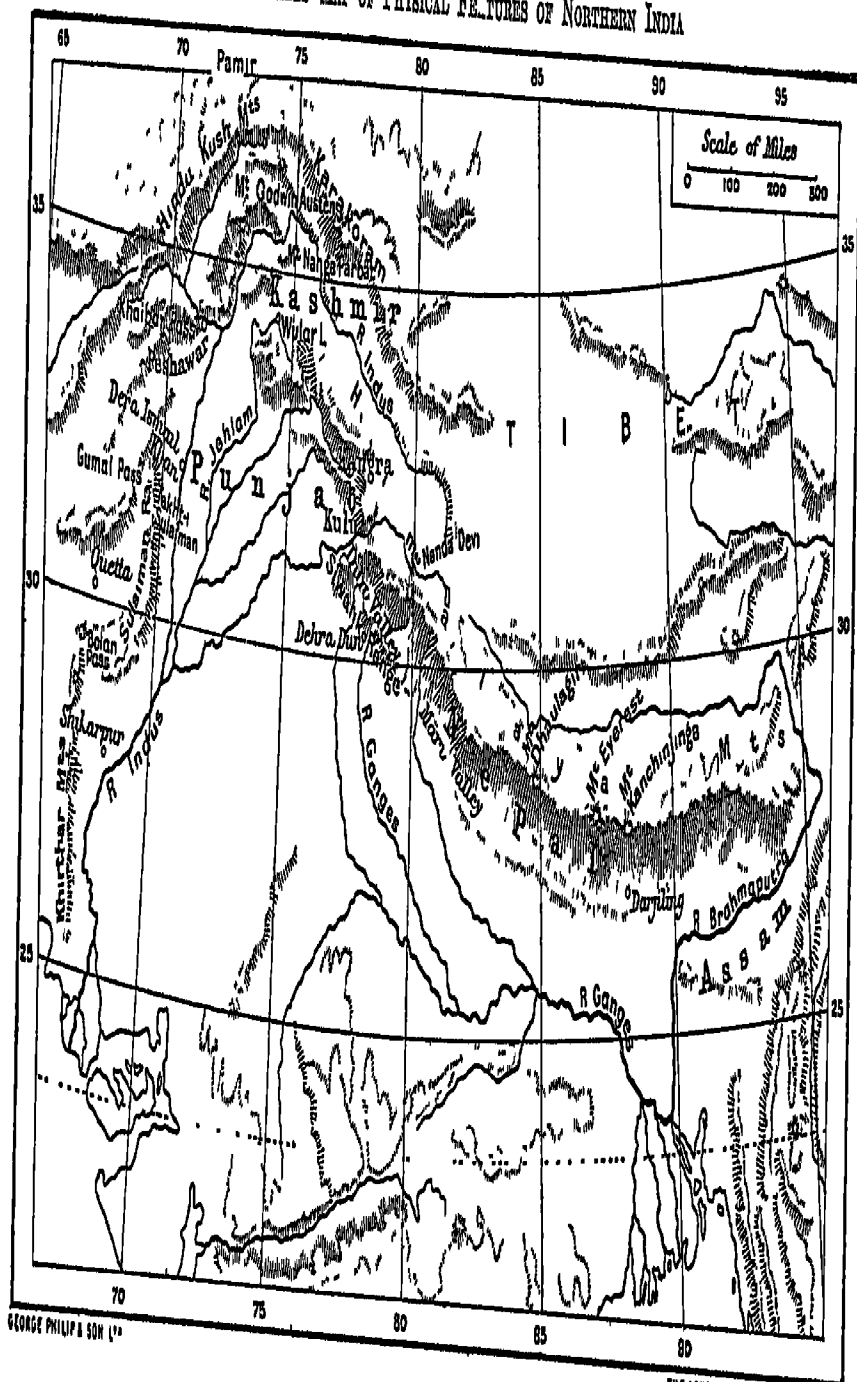
DRAINAGE.—The Himalaya Mountains drain into the great rivers of Northern India—the Indus, the Ganges, and the Brahmaputra. An enormous number of mountain streams and torrents combine to form the rivers which eventually debouch on to the plains, indeed it is to these hill streams that the great Indo-Gangetic Plain owes much of its productiveness, for they bring down water from the snows and silt from the mountain sides. Most of these rivers rise in glaciers and carve their way through the mountains in deep gorges.

The only lake of importance is **Wulur** in Kashmir, formed by the widening of the channel of the river Jehlam.

CLIMATE AND RAINFALL.—In ascending the Himalaya Mountains the same ranges of temperature are experienced as in proceeding from the Equator to the Pole, the snow-line being reached on the southern slopes at a height of 15,000 or 16,000 ft. The snow-line on the northern slopes is, strangely, 4,000 ft. higher, owing to (1) the greater dryness of the interior, (2) the smaller snowfall, and (3) the consequent increase of evaporation which goes on.

The mountains form a great barrier to the rain-bearing winds

FIG 44—DETAILED MAP OF PHYSICAL FEATURES OF NORTHERN INDIA



Longmans Green & Co., London, New York, Bombay & Calcutta.

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from the south, which, when they reach the inner ranges, have been deprived of nearly all their moisture. The winds which strike the western end of the range are less moist than those further east, and the rainfall therefore increases from west to east, from an average of 30 inches in a year in the upper basin of the Indus to 120 inches at Darjiling, and over 500 inches in Assam. Similarly the quantity of rain decreases towards the interior of the system, for reasons already given.

The local winds in this region blow with great regularity, from the plains towards the interior during the day, and in the opposite direction during the night.

VEGETATION.—The vegetation varies with the climate, from tropical species on the lower slopes to mosses near the snow-line. Although abundant along the whole Himalaya range, the vegetation of the more humid regions to the east is more luxuriant than in the west, where the climate is drier. Large areas of forest are preserved by Government and afford valuable supplies of timber. Near the plains bamboos, tree-ferns, palms, and many tropical timber trees are found. Above these is the zone of hard-wooded timber trees, and at a still higher elevation cone-bearing trees are met with, such as the pine, fir, larch, and yew. The most valuable timbers produced are deodar, sal, and tûn.

CULTIVATION.—Terraced cultivation is practised to perfection in the Himalayas. By this method space and water are utilised to the best advantage. Near the plains tropical crops, rice, maize, and millets, are grown, and at higher elevations wheat and barley. Damp heat is very favourable to the growth of tea, and important gardens are found in Assam, in the neighbourhood of Darjiling, in the Dun, and in the Kangra Valley. Fruit is grown in the drier and sunnier parts of the range to the east, especially in Kashmir, and in the Kulu district of the Punjab.

ANIMALS.—The forests of the Himalayas afford shelter to wild animals and birds in large numbers and in great variety. The elephant, rhinoceros, and tiger are found near the plains at the eastern end of the range, and the leopard is generally distributed. The bear wanders through the pine forests, and small fur-bearing animals, such as martens and weasels, are common. A few varieties of monkey are found, and the lemur

in Assam. Deer and goats are met with, the ibex being common in Kashmir. The long-haired goat is sought for on account of its hair.

The variety of birds is even greater than that of animals. The eagle, vulture, owl, and hornbill are amongst the larger species, while some of the smaller birds are remarkable for the beauty of their plumage. Snakes are abundant, and the butterflies are numerous and gorgeous in colour.

PEOPLE.—The character of the people changes as we proceed from one end of the range to the other. In the east there are a number of tribes under petty chiefs, and these resemble the Tibetans in physique, language, and customs. Towards the centre of the range, in Nepal, a gradual change occurs, Indian languages and customs superseding Tibetan. At the western end Muhammadan influence prevails, on account of its proximity to the Muhammadan countries of South-west Asia.

2. THE INDO-GANGETIC PLAIN

EXTENT AND BOUNDARIES.—This plain stretches right across the north of India, and forms the major portion of the continental part of the country. At its western end it extends over 10 degrees of latitude—from Peshawar to the Rann of Cutch—and tapers off in its eastern extremity along the narrow valley of the Brahmaputra. It is enclosed on the west and north by the great northern mountain wall, and abuts on to the sea at the mouths of the Indus and Ganges. From the valley of the Ganges the plain gradually rises towards the south, forming a triangular-shaped elevated mass known as the Central India Highlands, which are terminated westwards by the Aravalli Hills, and which merge, in the vicinity of the Tropic of Cancer, into the Vindhya Range—the northern boundary of the Deccan Plateau.

DRAINAGE.—The plain is divided into two parts by a low watershed, which runs from north to south along a line from the Simla Hills through Delhi, and thence along the Aravalli Hills. The valley of the Indus on the west slopes to the south-west, the valley of the Ganges to the east, and the slope of the Brahmaputra valley is towards the west as far as the 90th degree of

East Longitude, where it turns south, retaining this direction as far as the delta. The slope of the Central Highlands is to the north-east, and the Ganges receives several tributaries from this direction on its right bank.

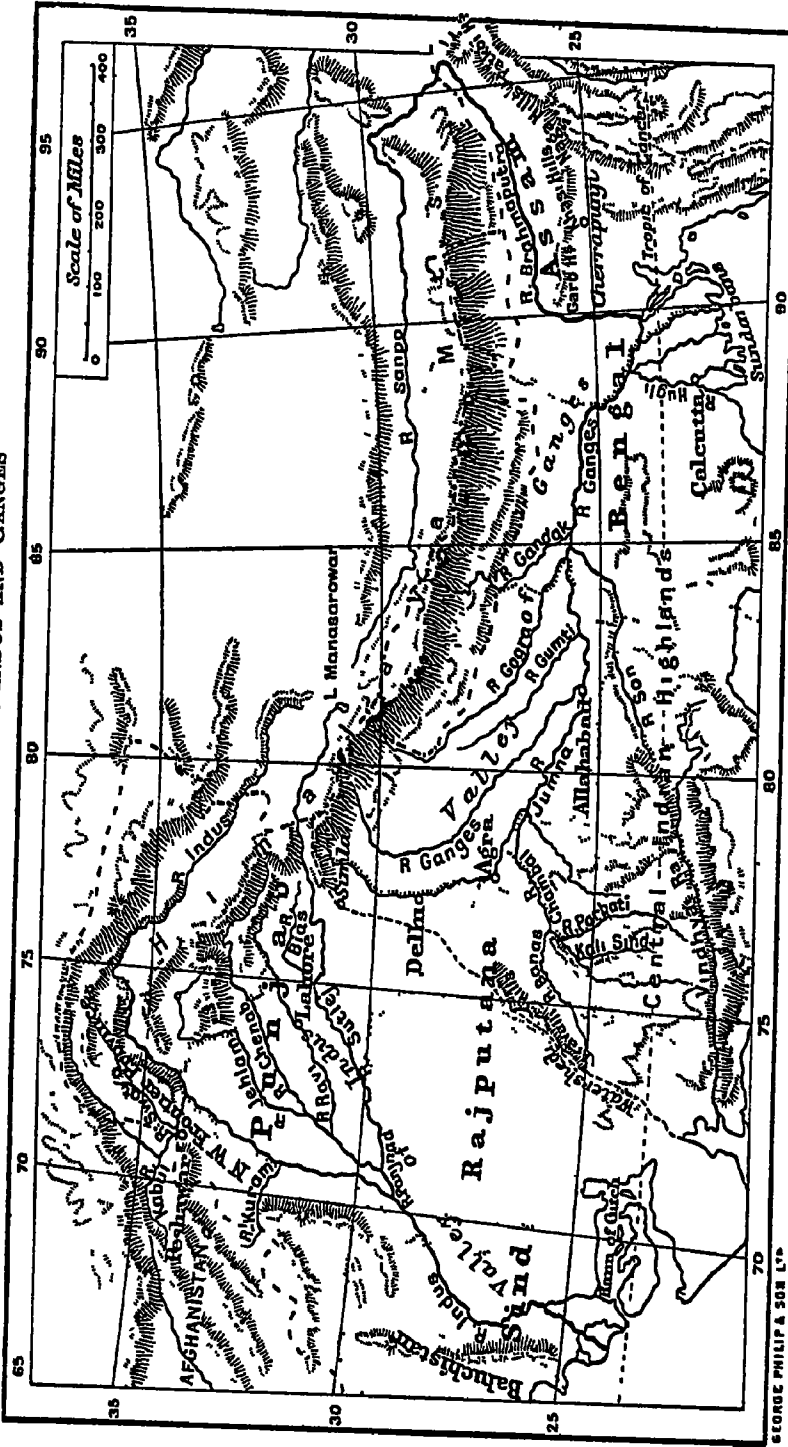
RIVERS—To the south-east of Kashmir, and to the north of the main chain of the Himalayas, lies the sacred **Manasarawar Lake**, or collection of lakes, at an elevation of over 15,000 ft. Within a small radius of this spot rise the great rivers of Northern India—the **Indus**, **Ganges**, and **Brahmaputra**—together with the **Sutlej**, **Jumna**, and **Gogra**. The Indus flows for 500, and the Brahmaputra (under the name of *Tsan-po*) for 800 miles in mountain valleys to the north of the range before turning south into India, while the Sutlej, Jumna, Ganges, and Gogra carve their way, often through very deep gorges, to their lower courses on the great plain.

1. The **Indus**.—The main course of this river forms almost a right angle, its direction in the mountains being to the north-west, and on the plain to the south-west. Owing to the proximity of its bed to the mountain ranges on the north-west frontier of India, its tributaries on the right bank are unimportant. The only considerable one is the **Kabul River**, which comes from Afghanistan. Smaller streams are the **Swat** and the **Kuram**. The Indus flows for hundreds of miles through the rainless belt, and receives therefore no tributary worth the name below the junction of the **Punjad**, which derives its waters from the Himalayas by the five rivers of the Punjab.

The **Punjad** is made up of two streams, the **Chenab** and the **Sutlej**. The former brings with it the waters of the **Jehlam** and the **Ravi**, the latter those of the **Bias**. All these rivers are singularly deficient in small tributaries, and in order to irrigate the naturally fertile province of the Punjab an extensive system of canals has been constructed, the head-works of which are located at the places where the rivers leave the mountains. The total length of the river is about 1,800 miles, and it finally breaks into a delta at the head of the Arabian Sea.

2. The **Ganges** is for several reasons the most important river in India. Its valley was the home of an ancient civilisation; it has for centuries supported a large population, it is navigable for a considerable part of its course, and it is held in great veneration

FIG 45—MAP OF THE INDUS AND GANGES



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by the Hindus. It is fed by a number of tributaries, the waters of which rise every year from the melting of the snows of the Himalayas and the monsoon rainfall. Not only is the whole area most effectually irrigated by these means, but the silt which is brought down and deposited is mainly responsible for the great fertility of the Ganges valley.

The chief tributaries draining the Himalayan region are the Jumna, Gumti, Gogra, and Gandak. The first of these joins the main stream on the right bank at Allahabad, the others join the left bank. The Gogra brings down the largest volume of water of all the streams, not excepting the Ganges itself.

The Central Highlands are drained by the Chambal and the Son. The former is a feeder of the Jumna, and brings with it the waters of a large number of streams, the chief of which are the Banas, the Kali Sind, and the Parbati.

After a course of about 1,500 miles the Ganges flows into the head of the Bay of Bengal by a delta of great extent, which encloses the district known as the Sundarbans. The chief mouth is the Hugli, on which stands Calcutta.

3. The Brahmaputra becomes an Indian river after breaking through the mountains in North-eastern Assam. It flows south-west for some distance, draining a narrow valley bounded northwards by the Himalaya Mountains, and on the south by the Patkoi, Naga, Khasi, and Garo Hills. On getting clear of the Garo Hills, the Brahmaputra bends sharply to the south and joins the delta of the Ganges. In no part of its Indian course is the bed of this river more than 600 ft above sea-level, and it therefore flows slowly enough to be largely used as a highway for traffic between Assam and Lower Bengal.

The rivers of Northern India present several noteworthy features —

1. They are typical in their stages. They have a rapid upper course in the mountains, a slower lower course on the plain, and empty themselves into the ocean by deltas, these deltas being due to the deposition of the silt brought down from the mountains.

2. They are valuable as irrigating and fertilising agents. The extraordinary fertility of Northern India is very largely due to the presence of these rivers.

3. They afford ready highways for traffic. Of the three rivers the Indus is the least navigable. The North Punjab is considerably higher than Sind, and the current of the Indus is therefore comparatively rapid. This rapidity of current and the shallowness of its bed render navigation difficult in certain parts of its course.

CLIMATE AND RAINFALL.—The Indian rainfall is periodic, most of it being received during the summer monsoon, from May to September. The south-east trade wind becomes a south-west wind after crossing the Equator, owing to the decreasing rate of the Earth's revolution, and the result is that the rain-bearing winds strike the peninsula on its western side and travel across the plain in a north-easterly direction to the Himalaya Mountains. The influence of these winds is but little felt west of the Aravalli Hills, and although the Punjab receives a certain amount of rain from the deflection of the current westwards along the main chain, Sind receives practically no rain at all. Towards the east of the plain the monsoon rains are usually heavy and the Bay of Bengal current brings much additional rain to Lower Bengal and Assam, the general result being that the humidity increases across the plain from west to east. This fact has an important bearing on the climate, for the greater humidity makes the climate of Bengal and Assam much more equable than that of the Punjab and Sind, where the summer and winter temperatures are alike extreme. The amount of rain received in North India during the winter monsoon is comparatively small.

The rainfall at Lahore is about 20 inches per year, at Calcutta about 65, while at Cherrapunji the average is about 500 inches.

VEGETATION.—In the dry region of Sind to the west, the palm and tamarisk are among the few trees which flourish in spite of the drought, but in the well-irrigated doabs of the Punjab, vegetation is both varied and plentiful. Forests are preserved in the Terai—the belt of jungle at the foot of the Himalayas—in the Central Highlands, and in Assam. The sal is the chief tree along the northern edge of the plain, and teak is found in Central India. Tropical forest trees are more or less abundant all along the valley of the Ganges, and especially in its delta. The occurrence of the mulberry tree in Bengal accounts for the presence of the silkworm and of the silk industry.

CULTIVATION.—Wheat and barley, not usually grown in sub-tropical countries, flourish during the cold winter of the Punjab, and the Punjab seed trade is annually becoming more important. Millets, sugar-cane, and oil-seeds (linseed, rape, castor, sesamum, &c.) are grown all over the plain. In the more humid and equable climate to the east, opium, indigo, and jute thrive well, and rice is extensively grown in the Ganges valley where the fields are easily flooded.

The method of irrigation is chiefly by means of canals in the valley of the Indus, and by tanks and wells in the valley of the Ganges.

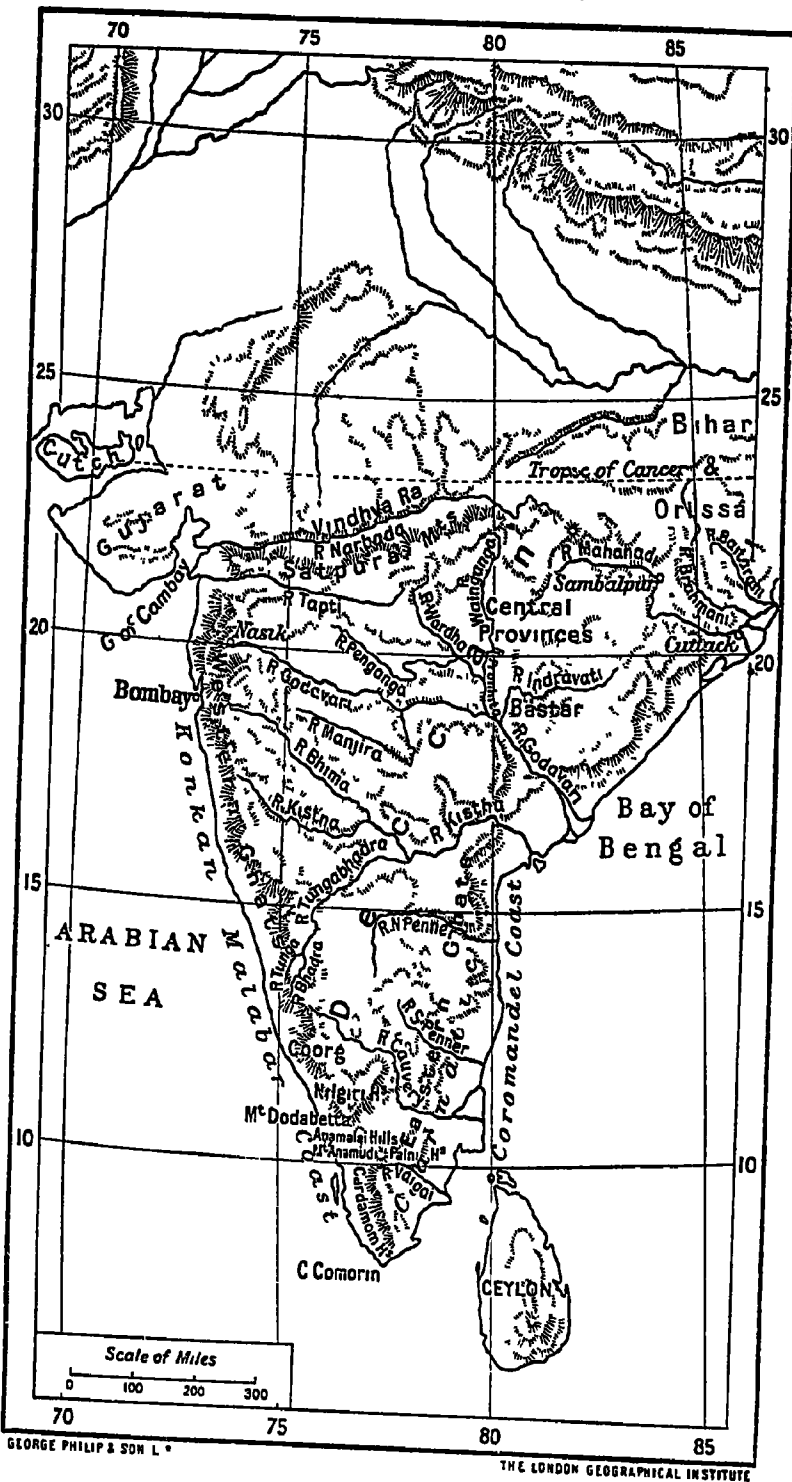
ANIMALS.—The chief wild animals are the jackal, the hyæna, the leopard, and the tiger. The elephant is found in Assam, and so is the rhinoceros. The wild ass occurs in Sind, and deer and monkeys are commonly distributed. The camel is used for purposes of transport in Sind, and the buffalo and the ox in all parts. Many kinds of snakes abound, crocodiles are found in the rivers and the lac insect is common in the forests of Bengai and Assam.

PEOPLE.—The variation which was observed in travelling from east to west of the mountains is noticeable to some extent also on the plains. The Tibetan type is found in Assam, where the Mongolian could find his way through the passes, and the Pathan has come down from the Muhammadan countries to the west into the Punjab and North-West Frontier Province. Practically the whole of the Indo-Gangenic plain is peopled by the Aryan race. Dravidians are found in the hilly country to the south of Bengal and in the Aravalli Hills and the Brahuïs of Baluchistan who find their way into Sind, also belong to this stock. The Sikhs of the Punjab and the Rajputs of Rajputana are among the most soldierly of the people of India.

8. THE DECCAN

EXTENT.—The Deccan tableland is triangular in shape, the base being the Vindhya Range and its hilly eastern extension, which correspond roughly with the Tropic of Cancer; and its apex Cape Comorin. The Deccan may therefore be said to consist of the whole of peninsular India which lies within the Tropics,

FIG 46—MAP OF THE DECCAN.



Longmans Green & Co, London, New York, Bombay & Calcutta.

except Gujarat and Kutch on the west, and Southern Bengal on the east. Cape Comorin lies on the 8th parallel of latitude, so that the plateau extends over $15\frac{1}{2}^{\circ}$ from north to south.

RELIEF.—The Deccan is bounded on its three sides by mountain ranges: on the north by the two parallel chains, the Vindhya and the Satpura Mountains; on the west by the Western Ghats, and on the east by the Eastern Ghats. The two ranges of Ghats, which are really the elevated edges of the plateau, meet and culminate in the south in a knot of mountains—the Nilgiri Hills.

The Western Ghats form a continuous chain which rises above 4,000 ft. for the greater part of its length, and reaches its greatest height (8,750 ft.) in Dodabetta in the Nilgiri Hills. From this long flanking wall the plateau slopes gently away to the east, so that all the drainage is from west to east. It will be readily seen, therefore, that the Eastern Ghats are much lower and much less continuous than the Western Ghats. South of the Nilgiris is the Palghat Gap, a remarkable depression, separating the Western Ghats from the hills in the south of the peninsula. These are in three short chains, which radiate from a central knot, viz. the Anamalai Hills, which culminate in the peak of Anamudi, the highest in the Deccan—about 8,850 ft. above sea-level; the Pulni Hills, which strike eastwards; and the Cardamom Hills, which run southwards, dividing Travancore from the Madras Presidency.

Bounding the Deccan on the east and west are two coast strips of flat land, that on the west being much narrower than that on the east. The western coast strip is called the Konkan in the north and the Malabar Coast in the south. The eastern coast strip is known as the Coromandel coast; the southern part, where it is much wider than in the north, receiving the special name of the Carnatic.

DRAINAGE.—The general slope of the tableland we have seen to be from west to east; most of the great rivers therefore flow into the Bay of Bengal. North of the Western Ghats, however, the drainage of the Vindhya and Satpura Mountains is westwards into the Arabian Sea.

Flowing into the Bay of Bengal are the Mahanadi, Godaveri, Kistna, North and South Penner, Cauvery, and Vaigai; and into the Arabian Sea, the Tapti and Narbada.

1. The Mahanadi rises near the borders of Bastar State, and flows in a great curve as far as Sambalpur. Below this town it descends into the coastal plain through a gorge. It then breaks up into a large delta, which encloses the district of Cuttack, and which receives the waters of the Brahmini and Baitarani from the north. The Mahanadi is navigable for a considerable part of its course.

2. The Godaveri traverses almost the entire breadth of the peninsula, rising in the Western Ghats, near Nasik, within fifty miles of the western coast. It flows almost due east until, after passing through a remarkable gorge, it enters the coast plain, which penetrates at this point for a considerable distance into the tableland. The most important tributary is the Pranhita, which is made up of three streams—the Painganga, the Warda, and the Wainganga. Smaller streams are the Indravati, also on the left bank, and the Manjira on the right bank. The Godaveri is the longest river of the Deccan (800 miles) and has the largest basin.

3. The Kistna also rises at no great distance from the west coast, its general course from source to mouth converging towards that of the Godaveri. Like the other Deccan rivers of the east coast, it breaks through the Eastern Ghats in a gorge, and enters the ocean by a delta. The chief tributaries are the Bhima on the left bank, and the Tungabhadra (formed by the Tunga and the Bhadra) on the right bank.

The Cauvery rises in Coorg, and has a general course to the south-east. It encloses a series of islands in its course, and the rapids formed in its descent to the coast-plain are, in some places, of great beauty.

The Narbada and Tapti are the only rivers of importance which drain from the plateau into the Arabian Sea. They have almost parallel courses, the former between the Vindhya and Satpura Ranges, and the latter south of the Satpura. Both rivers rise high on the plateau, both have rapid courses through deep gorges, both enter the Gulf of Cambay by an estuary, and both are unnavigable except for a few miles at their mouths. The Narbada is esteemed by Hindus with a veneration almost equal to that with which the Ganges is regarded.

Comparison of the Rivers of the Deccan and those of the

Northern Plain.—1. The rivers of Northern India obtain their supply of water chiefly from the melting of the snows on the Himalaya Mountains, while the rivers of the Deccan are fed almost entirely by the rains which fall during the monsoon seasons. The chief result of this is that whereas the great rivers of Northern India have a fairly steady supply of water throughout the year, the rivers of the Deccan are in heavy flood during a part of the year, and are almost dry at other times

2 The stages of the rivers of Northern India are typical; those of the Deccan have long upper courses on the plateau, a short descent through gorges on to the coast-plain, a short lower course, and deltas at their mouths.

3. The rivers of the Deccan are less valuable for purposes of irrigation and navigation than the rivers of Northern India.

NOTE—The rivers rising in the Western Ghats bring down water to their lower courses during the early monsoon period, and thus irrigate the eastern coast-plain before the arrival of the rains

CLIMATE AND RAINFALL.—Peninsular India has an equable climate, although the mean temperature of the coast-strips is much higher than that of the tableland. This uniformity is due—more especially in the case of the coast-plains—to the proximity of the ocean, and—in the case of the interior—to the elevation.

The greater part of the rainfall, except in the south-east, is received during the south-west monsoon (see page 56) The rain-bearing winds strike the western face of the Western Ghats, and here abundant rain is received. But before the winds can cross the mountains they have been deprived of much of their moisture, and hence the rainfall of the Deccan is uncertain. Towards the north of the plateau the Vindhya and Satpura Mountains, running east and west, allow the monsoon winds to penetrate for a considerable distance inland before depositing their moisture.

The eastern coast strip, and especially the southern portion of it, receives considerable rainfall from the north-east monsoon.

VEGETATION.—The mountain ranges of the north, west, and south are clothed with forests, the chief trees being teak, sal, ebony, and sandalwood. The cinchona tree, from the bark of which quinine is made, is also grown on the mountains, and

the coco-nut palm grows on the coast-plains, in the south of the peninsula.

The most important cultivated crop of the Deccan is cotton, which thrives in the black soil. Rice is grown on the Madras coast-plains, and millets, oil-seeds, sugar-cane, and tobacco are fairly generally distributed. Tea and coffee shrubs grow well on the warm damp hillsides in the south, and spices flourish along the south-east coast strip.

ANIMALS.—The animals of the Deccan do not differ materially from those of Northern India. The tiger, hyæna, and jackal are met with in all parts, and the elephant roams wild in Mysore and South India, where wild buffaloes are also found. The ox and buffalo are generally employed for draught purposes. The birds, reptiles, and insects are also those common to the whole of India.

PEOPLE.—The highlands of the Deccan have always, at the time of invasion, afforded a place of refuge to the conquered peoples of the northern plain, and here they have resisted their foes. Hence we find in this part of India Dravidian races, aboriginal tribes, such as the Gonds of the Central Provinces and the Todas of the Nilgiri Hills, also the soldierly Mahratta of the west. Parsis, who are thinly spread all over India, are specially prominent in Bombay—that being, at the time of their flight, the port nearest Persia, their original home, and being also a suitable centre for their commercial activity.

4. BURMA

EXTENT.—The 'physical' region of which the province of Burma forms a part extends over the whole of the most eastern of the three peninsulas to the south of Asia. On the west the boundary of the region is the Bay of Bengal, which is broken near the 16th parallel by the Gulf of Martaban. The boundary between the provinces of Burma and Assam on the north does not coincide with the physical boundary, for the mountains of Burma merge for some distance on to the plain to the south of the river Brahmaputra. The eastern limit of British territory is an irregular line stretching from the 28th parallel to the Isthmus of Kra, drawn without particular reference to the physical contour.

RELIEF.—Burma is essentially a mountainous country, the more or less parallel ranges being a continuation southwards of the eastern end of the Himalayan chain. These ranges alternate with the river valleys, the general slope of the land being from north to south.

1. Between the coast and the Chindwin River are the Patkoi Hills, the Naga Hills, and the Lushai Hills. These are continued southwards in the Arakan Yoma, between the lower course of the Irawadi and the sea, this range terminates in Cape Negrais.

2. The next ridge—the Pegu Yoma—is broken into two parts by the bend in the Irawadi near Mandalay. This range separates the valleys of the Chindwin and Irawadi in the north, and those of the Irawadi and Sittang in the south.

3. Chinese influence is to be seen in the name of the third range—the Rung-lung—which divides the upper Irawadi and Sittang valleys from that of the Salwin. This range is continued southward into the Malay Peninsula.

DRAINAGE.—The rivers have all been referred to above and their courses indicated. They flow in parallel valleys. In the western valley, the Chindwin and the lower course of its main stream—the Irawadi; in the central one, the upper course of the Irawadi and the Sittang, and on the east, the Salwin.

1. The constancy of the rainfall keeps all these rivers well supplied with water, and they are all useful for irrigation. In April they begin to swell as the snow melts on the mountains of the interior, and they continue in full flood all the summer.

2. The Salwin flows through mountain gorges and the Sittang is blocked by shoals, hence these streams are of little use for navigation. The Irawadi, on the other hand, is navigable for 800 miles, and is the great commercial highway of Burma.

3. The Irawadi enters the ocean by a delta, the Sittang and Salwin by estuaries.

4. The Irawadi has a long 'plains stage,' the Sittang has practically no 'mountain stage,' and the Salwin has little or no 'plains stage.'

RAINFALL AND CLIMATE—The rainfall of Burma is generally abundant. The south-west monsoon winds bring very heavy rain to the coast regions, and an ample though less heavy fall to the lower basins of the rivers further inland. The only

area which can be called dry is in the northern interior, the winds which reach this part of the country having been deprived of their moisture in passing over the mountains nearer the coast.

These facts, together with the latitude and elevation, account for the climate, which is hot and moist in Lower Burma, and cooler and drier in the mountainous districts of the north-east.

PRODUCTIONS.—A large part of Burma is covered with forests under Government preservation. The principal timber is teak, and rubber trees are also largely cultivated. Rice is the chief crop grown, the wet climate and splendid river system favouring the success of this grain. Other crops are those common to the whole of India—sugar-cane, tobacco, cotton, and millets.

PEOPLE.—The mountains to the north of Burma have kept that country distinct from India as effectually as the Himalaya Range has kept India and China apart. The people are therefore mainly Mongolian in race, the foreign element being modern and due to recent commercial development. The hills of the interior are the home of many wild tribes, of whom the best known are the Shans, who inhabit the country to the east of Mandalay, and the Kachins of the extreme north-east.

EXAMINATION PAPERS

- A. 1. What natural advantages does India enjoy with regard to (1) position, (2) boundaries?
2. Describe a coasting voyage from Karachi to Rangoon, stating in order the chief ports, openings, and river mouths passed.
3. Give an account of the great mountain region of North India
4. Show clearly why the height of the snow-line increases as we travel northwards across the Himalaya Range
- B. 1. Give an account of the drainage of the Punjab.
2. Draw a sketch-map of the Ganges, and insert the chief tributaries and towns on their banks
3. Show clearly why the climate of Sind is more extreme than that of regions in the same latitude further to the east
4. In what localities are the following products grown.—wheat, cotton, rice, tea? Why is each grown in the particular locality?
- C. 1. Describe the physical features of the Deccan, and show the effect of the contour of the land upon the rainfall
2. Name the chief rivers of the Deccan. Compare and contrast them with the rivers of Northern India.

3. How does the east coast of the peninsula differ from the west? What is the commercial effect?
4. What are the chief vegetable products of the Deccan? Where are they respectively grown?
- D. 1. Describe with a sketch-map the mountain system of Burma
2. Write an account of the river Irawadi. What is its value as a commercial highway?
3. Compare the effect of the monsoon in Burma and the Deccan.
4. What races and tribes of people inhabit Burma?
- E. 1. Which of the Indian rivers are used (1) for irrigation, (2) as highways, (3) as boundaries.
2. What are the chief forest products of India? Where are they found?
3. Compare the rainfall of Bombay and Madras as to (1) season, (2) amount, (3) direction of rain-bearing winds. See Maps, p 123.
4. Between what parallels of latitude does India lie? What proportion of the country lies within the Tropics?

CLIMATE OF INDIA.—We have considered the climate of the various regions of India separately, we will now consider the climatic conditions over the country as a whole. Look at figs on page 122: these show the isothermal lines over India for the months of January and July, that is, the lines connecting all the places having the same mean temperatures in those months. Let us first consider the isotherms for January. In that month the sun is shining perpendicularly near the tropic of Capricorn, and the rays fall over India in a slanting direction. The temperature is therefore nowhere excessive, ranging from 50° in the north, to 75° in the south of the peninsula, and to 80° in the Andaman Islands. It will be observed that the temperatures fall as we proceed northwards, that is as we recede from the sun, and also that the isotherms, although not corresponding with the lines of latitude, are fairly regular, and nearly parallel with each other. This is because the heat is not great, and there are generally no great extremes of temperature. One or two variations from the general direction of the lines from east to west require special notice. Look at the 55° and 60° lines. They both make a bend to the south in the north-west of India. Why is this? You will observe that the bend is towards the Sind and Rajputana deserts. Now, owing to the lack of moisture, deserts become extremely hot when the sun shines directly over them, but they also become very cold during the night in winter.

FIG 48—INDIA. JANUARY ISOTHERMS

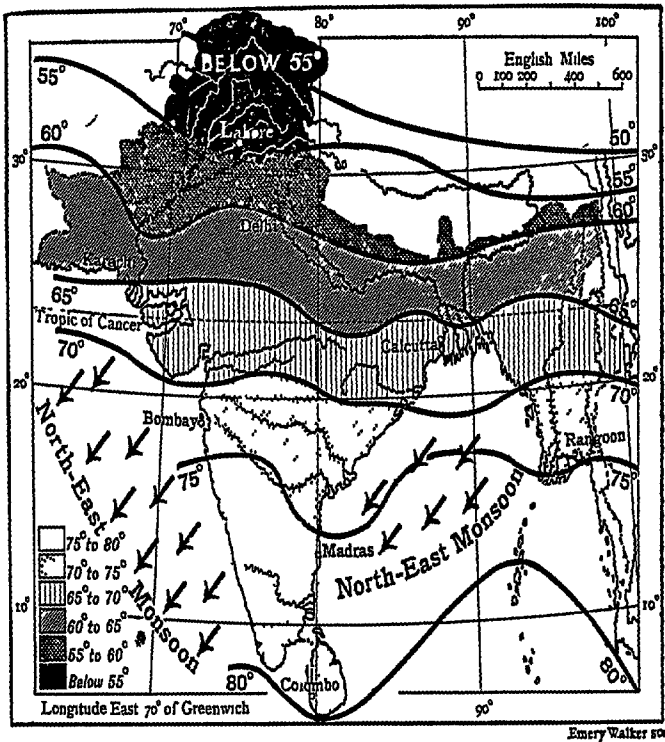


FIG 48a—INDIA JULY ISOTHERMS

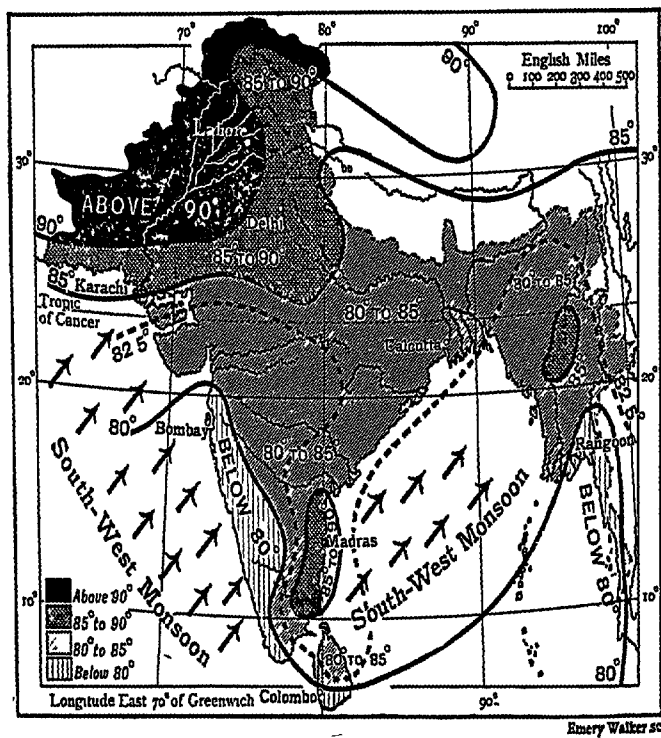


FIG 48b —INDIA RAINFALL DURING SOUTH-WEST MONSOON JUNE TO OCTOBER.

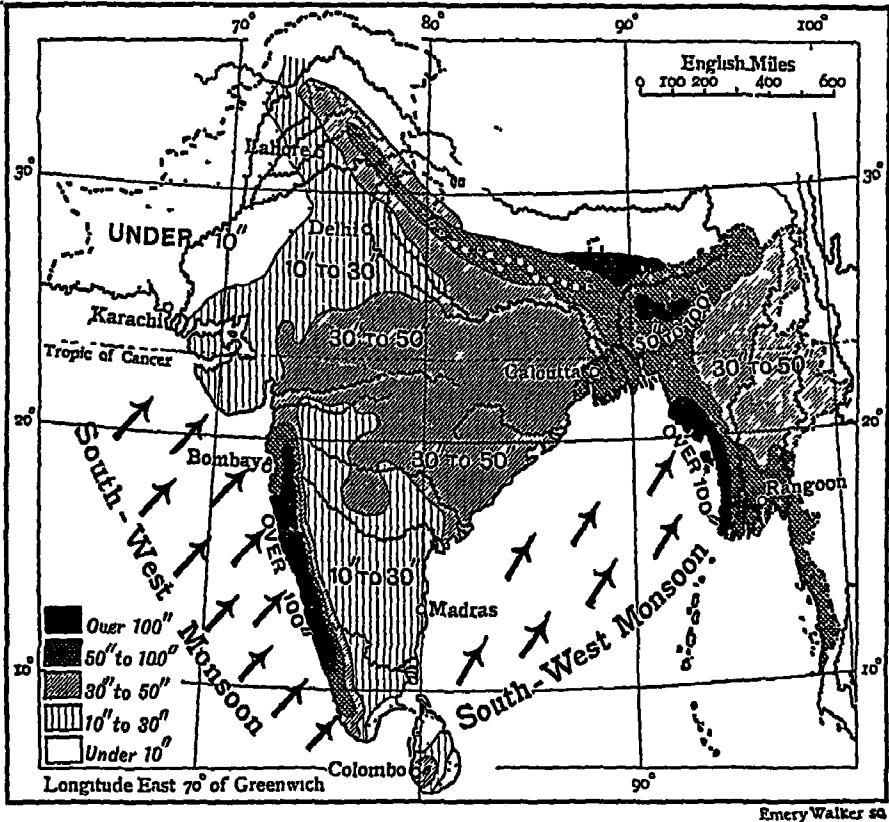
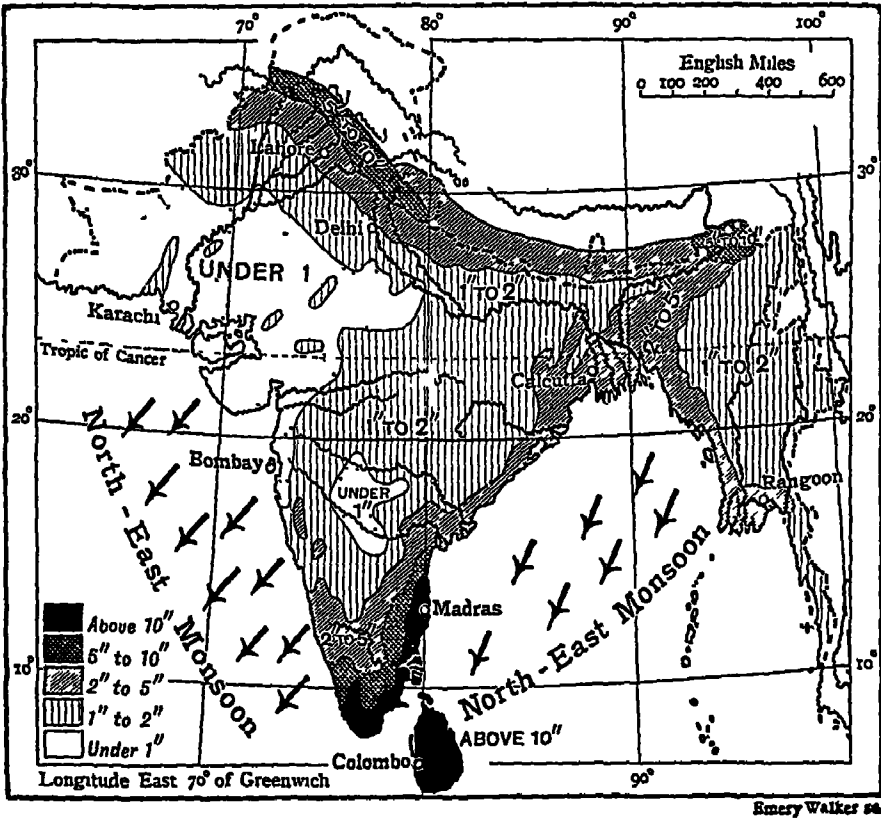


FIG 48c —INDIA RAINFALL DURING NORTH-EAST MONSOON NOVEMBER TO FEBRUARY



This accounts for the mean temperature being lower in these districts than in moister areas on the same latitude. But the 75° line also bends to the south in the neighbourhood of Madras. This is due to a different cause. The Coromandel Coast receives most of its rain during the winter, and it is this rainfall which has the effect of lowering the temperature, and of causing the winter temperature of Madras to be about the same as that of Bombay, which is about six degrees further north on the opposite coast.

The isothermal lines for July are seen to be very much more irregular than those for January. In July the sun is shining perpendicularly near the tropic of Cancer, and the mean temperatures over India are therefore high, viz. from 95° to 80°, the heat decreasing from north to south, that is away from the sun. The highest temperatures are recorded in the north-west, where the deserts of Sind and Rajputana have the effect of intensifying the heat. The lines of 85° and 90° are seen to traverse the region of Tibet and to turn northwards in the east towards the deserts of Gobi and Mongolia. Here the dryness of the climate has the effect of counteracting the elevation, and high temperatures therefore prevail. At the western end of the Himalayas these two lines bend sharply round into the plain of northern India, not penetrating, however, into Bengal and Assam, where the heavy rainfall prevents excessive heat. It will be observed that the Coromandel Coast of the peninsula and the interior of Burma also have a mean temperature of 85°. In these areas the effect of the summer monsoon is but little felt, and the deficiency of rainfall accounts for a higher temperature than in other districts on the same latitude which enjoy a heavier rainfall. The lower temperature of the Deccan and Burmah is due partly to its higher elevation than the Indo-Gangetic plain, and partly to the heavy rainfall, but especially to the latter. This will be readily seen if this map be compared with the rainfall maps on page 123.

PRACTICAL EXERCISES

1. What are the causes of the great summer heat in North-Western India ?
2. Compare the summer and winter rainfall of Bombay. How do the S.W. and N.E. monsoons affect it ?

3 What are the causes of the small rainfall over the country drained by the lower course of the R. Indus ?

4 What are the causes of the great range of temperature at Lahore ?

5 Draw a line from Madras to Lahore [see map, India, p 123 . Rainfall November to February] and write down the rainfall in inches of the areas through which the line passes

6 Give the summer and winter temperature and rainfall of Karachi [see maps on pp 122 and 123]

7 From a study of the maps on pp 122 and 123 what parts of India would you expect to be least productive ?

PEOPLE AND LANGUAGES OF THE EMPIRE.—The number of races and tribes in India is very large, and the variety of languages and dialects larger still. Speaking generally, the races of India may be classified as **Aboriginal, Dravidian, Aryan, and Tibeto-Burman.**

1. **Aboriginal.**—These are the **Kolarian*** tribes, which are found scattered to the north of the great plain and to the north of the great plateau. The **Bhils** of Indore and Rajputana and the **Santals** of Bihar are the best known.

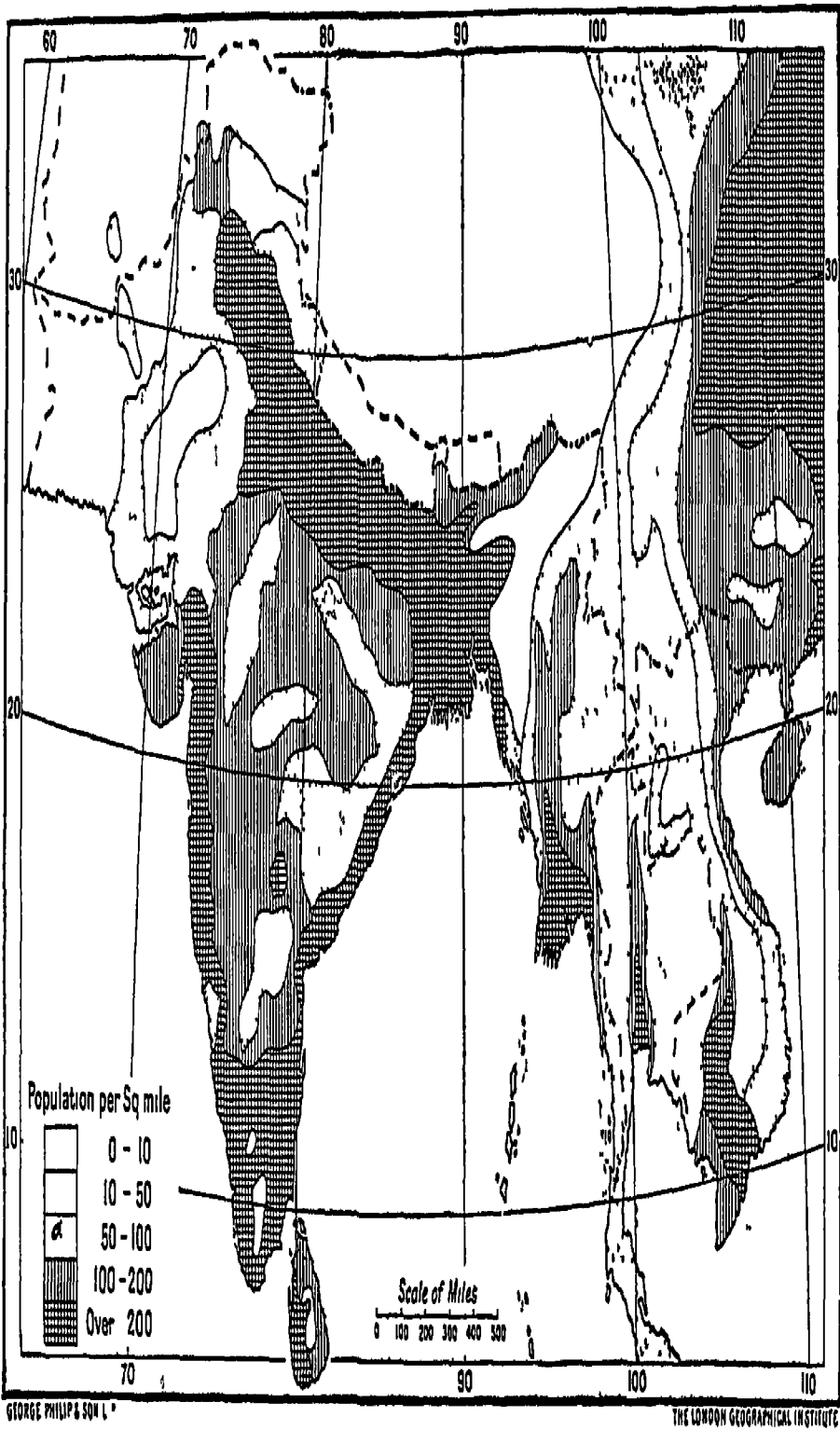
2. **Dravidian.**—This race is mainly confined to South India and the Deccan, where they were driven by the Aryans. They are generally supposed to have entered India from the north-east, but a later theory is that they came by way of Persia, Baluchistan, and Sind, and the presence of the **Brahui** (an isolated Dravidian tribe) in Baluchistan supports this view. The chief languages of the Dravidian peoples are **Tamil, Telugu, and Kanarese.** A few isolated tribes retain the early characteristics of the race such are the **Gonds** of Bastar and the **Todas** of the Nilgiris. The total Dravidian population is just under 60 millions.

3 **Aryan**—This race came into India from the north-west and drove the Dravidian southwards. Although their influence has spread over the whole country, they were really established in the northern plain. The Aryan group of Indian languages can be traced to **Sanskrit**, the chief members of the group being **Bengali, Hindi, Marathi, Gujarati, and Punjabi.** The total Aryan population is over 221 millions.

4. **Tibeto-Burman.**—The people of this race are **Mongolian** and inhabit Burma and the countries bordering on Tibet, *e.g.* **Nepal, Sikkim, and Bhutan,** and the **Ladakh district of Kashmir.**

* Some authorities connect the word *kuli* (coolie) with the generic name *Kolarian*

FIG 48d. -POPULATION.



The language of Burma is Burmese, and of the Himálayan tracts, dialects of Tibetan. Population, $11\frac{3}{4}$ millions

The Europeans in India number only 270,000, and Parsis and Eurasians less than a lakh each.

The total population of the Indian Empire in 1911 was 316 millions.

RELIGIONS OF THE EMPIRE—1. **Animism** or **Fetish-worship** is a religion of fear which teaches that spirits (Lat. *animus*—a spirit) dwell in natural objects, such as rocks, trees, &c., and that these spirits have to be worshipped and propitiated. This form of religion is practised among the forest races of the centre and south of the peninsula, and on the lower Himalayas. The chief of these tribes are the Santals, Gonds, and Bhils of Central India, the Badagas and Kurumbas of South India, and the Nagas of Assam.

2. **Hinduism** is a general term applied to the religion of those who preserve caste and reverence Brahmans. The religion—**Brahmanism**—of which it is in many cases a modification, is one of the most ancient systems in the world. Nearly three-quarters of the people of India are Hindus.

3. **Buddhism**, founded by Buddha 2,500 years ago, did not remain permanently the religion of India Proper, and now prevails only in Burma and to a small extent in the Himalayas. Its influence, however, may be traced in the present Hindu religion

4. **Muhammadanism** has followers in all parts of the Empire, but the only divisions in which the majority of the people are of this creed are those in the north-west—Kashmir, North-West Frontier Province, the Punjab, Baluchistan, and Sind—and Eastern Bengal.

5. **Christianity** is professed by about 1 per cent. of the population. The largest colonies of Indian Christians are in South India

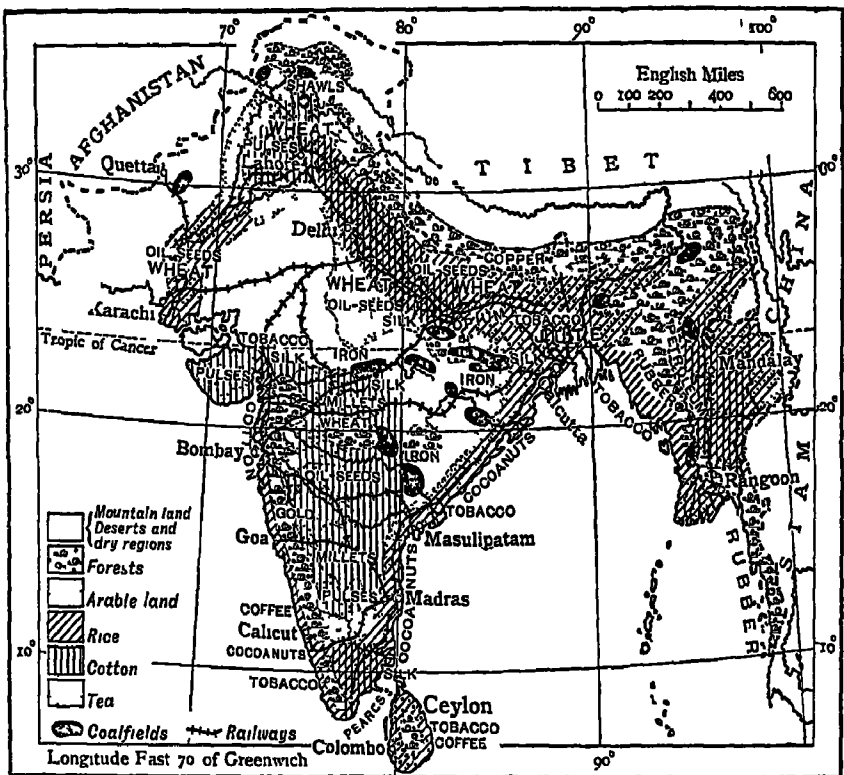
Sikhs and Jains are not numerous. The former are found chiefly in the Punjab and the latter in Western India

OCCUPATIONS OF THE PEOPLE—1. **AGRICULTURE** is the employment of about three-quarters of the population, and nearly the whole of this vast number depend upon the rains for their very existence. In the Punjab, which is outside the monsoon region, and to some extent in the United Provinces, Bengal, and

Madras, canal irrigation removes much anxiety on account of deficient rainfall. The chief crops raised may be classified into (1) Foods; (2) Fibres; (3) Oil-seeds; (4) Drugs, beverages, &c.

(1) Foods.—Rice is by far the most important food-grain cultivated in India. It requires a wet climate, as it has to be flooded for some weeks in the early stages of its growth. It is therefore grown (a) in the valley of the Ganges, which is flooded during the monsoon, (b) on the Madras coast-strip, which is

FIG 48c — INDIA' VEGETATION, MANUFACTURES, AND RAILWAYS.



abundantly watered by the rivers, and (c) in Burma, which has a heavy rainfall.

Wheat is indigenous to the temperate zone, and is therefore a winter crop in India, and only in those provinces—*e.g.* the Punjab and United Provinces—which have a pronounced cold weather.

Barley requires similar conditions to wheat, but being less in demand as a commercial commodity, is not so extensively cultivated.

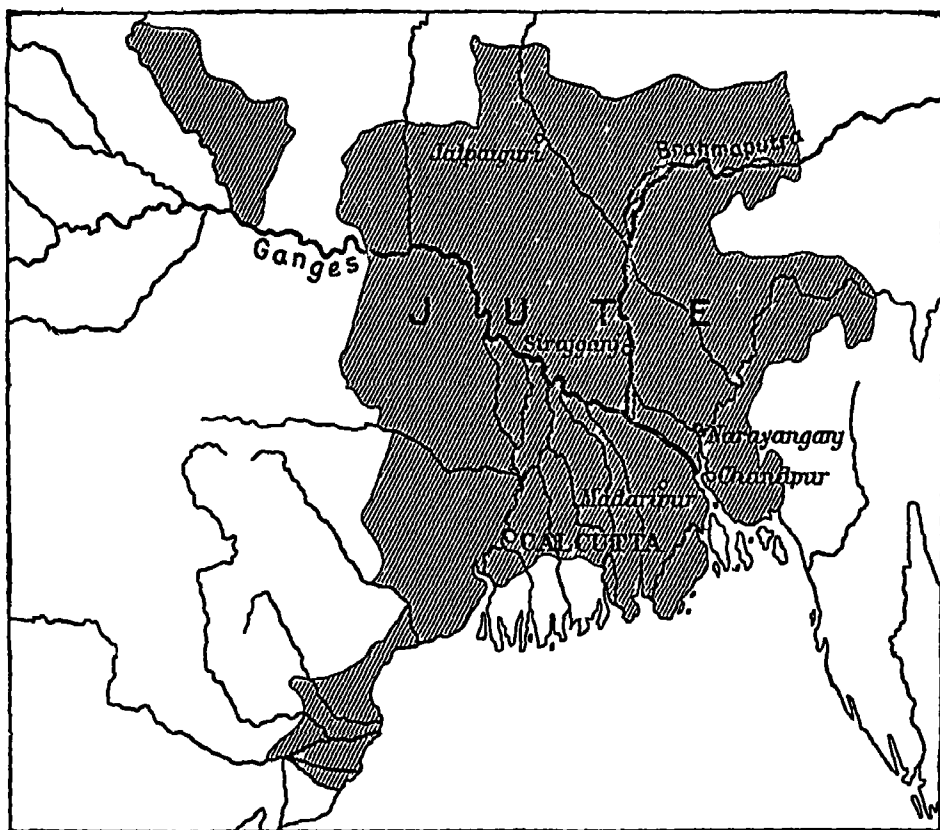
Millets and other grains, such as maize and pulse, form the

staple food of a large section of the population, and are grown more or less all over the country.

Sugar-cane does not require so much water as rice, but the conditions favourable to rice are generally favourable to sugar-cane also. This crop is reared, therefore, in the rice-growing provinces (see above) and in the Punjab.

Spices are chiefly grown in the extreme south, but certain varieties for general use, *e.g.* chillies, are cultivated everywhere.

FIG 48f.



(2) **Fibres.**—Cotton is the chief fibre produced in India. The soil best suited to its growth is the 'black soil' of the Deccan, and the Bombay Presidency is the most important cotton-growing area. It is grown in smaller quantities in nearly all the provinces. Indian cotton is generally of 'short staple'.

Jute requires a good deal of water and a rich soil. A soil, therefore, which cannot be kept damp and which cannot be continually replenished is not suited to its growth. The lower

course of the Ganges, which fulfils both these conditions, is the most important jute-growing centre in the world.

Hemp and flax are obtained from the stems of plants which are generally grown.

Silk is obtained from cocoons which are collected in the forests of Bengal, Assam, Kashmir, and other parts.

(3) **Oil-seeds.**—The seeds from which oil is expressed are cultivated in most parts of the country. The chief are linseed (the seed of the flax plant), sesamum or gingili, castor (which produces castor oil), and rape (from which is extracted colza oil). Cotton seeds also yield a valuable oil. The residue after the oil has been expressed is called oil-cake, and is used as food for cattle.

Sesamum is cultivated chiefly in Bengal and Burma; linseed in the Punjab and United Provinces; castor in the Ganges valley.

(4) **DRUGS, BEVERAGES, &c.**—Opium is a drug obtained from the seed of the poppy, which is grown on a large scale in the United Provinces, Bengal, and Central India. The production of opium is under Government supervision, and its sale is a Government monopoly. For many years the chief consumers of Indian opium have been the Chinese, but the abuse of the drug by those people has led to measures being taken restricting its production and export.

Hemp, which has been mentioned above as producing a fibre, is also grown for the sake of the narcotics, bhang and charas, which are obtained from it.

Tobacco is chiefly grown in the Madras Presidency and in Burma. It is also cultivated in the valley of the Ganges.

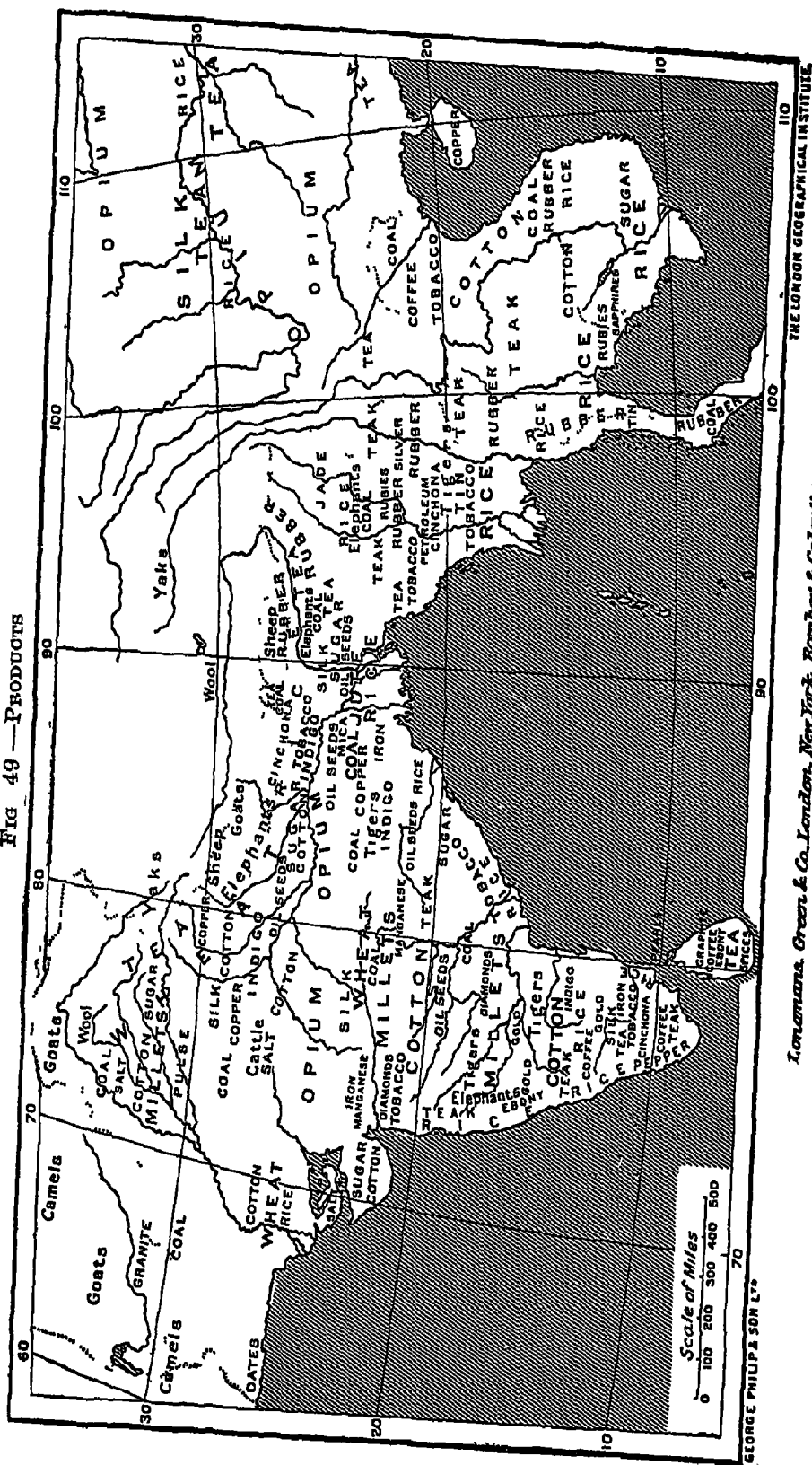
Tea requires a wet climate, but it is best suited to a sloping soil from which the water can drain easily. It is therefore grown on the hills in Assam, in Dehra Dun, the Kangra Valley, and on the Nilgiris.

The districts known as the Terai and Dooars at the foot of the Himalayas are famous for their tea gardens. The tea produced is not so finely flavoured as the hill teas.

Coffee requires less moisture than tea, and thrives where the rainfall is not heavy. It is chiefly produced in Coorg, Mysore, and the south of the peninsula.

The cinchona tree, from the bark (*Peruvian bark*) of which quinine is made, is also grown on the hills of South India,

Fig. 49—Products

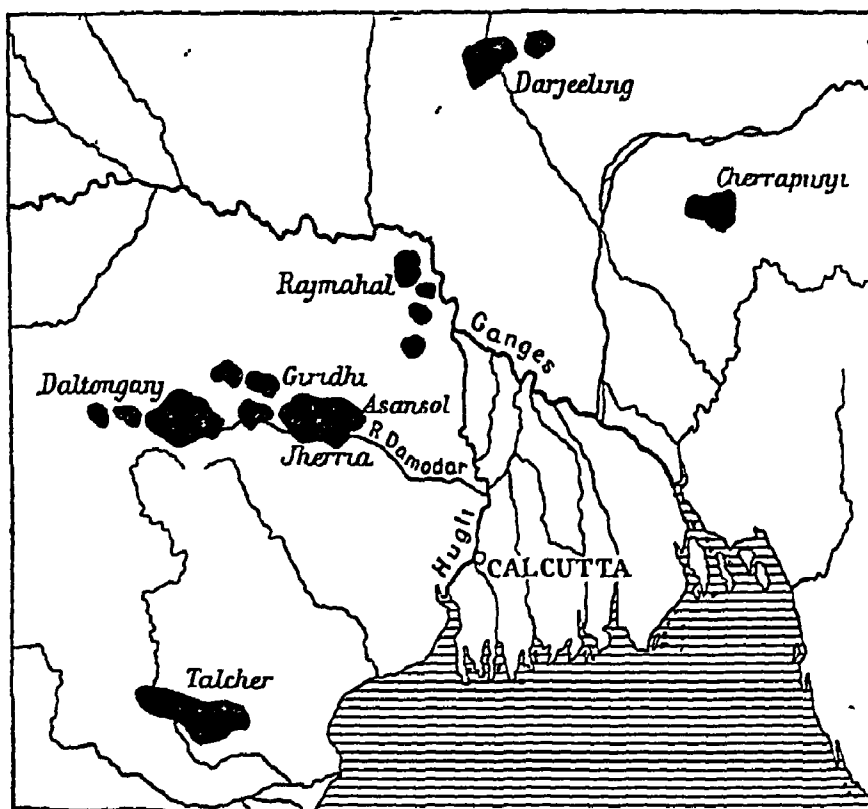


where the climate is most like that of Peru, whence it was introduced

Indigo, which yields a blue dye, is cultivated in Bihar and the valley of the Ganges generally, and also in Madras, but since the dye has been manufactured chemically, the cultivation of the indigo plant has decreased.

2. MINING.—The mineral wealth of India has not yet been fully explored.

FIG 42a — COAL-FIELDS



Gold—This metal is mined chiefly in Mysore. It is also found in small quantities in some of the river beds.

Coal.—The chief mines are in Bengal, in the valley of the River Damodar, which flows into the Ganges delta. Asansol is the centre of the coal district. The mineral is also found in Assam, the Punjab, and the Central Provinces.

Iron.—The best iron ore is found in Madras, but the absence of coal and limestone prevents it from being extensively worked. The ore found in Bengal, however, is smelted, on account of the proximity of the coal-mines.

Salt is dug from the Salt Range in the Punjab, collected from the shores of Sambhar Lake in Rajputana, and obtained by evaporation from sea-water round the coasts.

Petroleum is obtained in large quantities from Upper Burma.

Mica is found in larger quantities in India than in any other country. The supplies come chiefly from Bengal and Madras.

Manganese ore is being extensively worked in the Central Provinces and in Madras

Tin is found in the Tenasserim provinces.

Of precious stones, rubies are found in Burma and diamonds in Haidarabad (Compare the localities of the minerals with the 'old' part of the country. See above, 'Geological History,' page 101.)

PRACTICAL EXERCISES

1 What are the chief crops grown in the Deccan, and show how they are dependent upon the monsoon ?

2 Which parts of India produce wheat ? What are the chief ports for its export ?

3 Upon what crops do the people of India mainly depend for food ? Generally speaking, what is the food of the people in Northern and Southern India ?

4 If the monsoon fails, what effect has this upon the crops and upon the people ?

5 During what months do the rain-bearing monsoon winds blow ?

6 Draw a sketch-map and show districts where there is an excessive rainfall. What physical conditions are the cause of this ?

8. MANUFACTURES.—Manufacture on a large scale in India has only recently begun to be developed, although in all parts of the country local industries are carried on to supply the immediate needs of the people. The factories are springing up chiefly in the large centres of population.

In agricultural districts products of the soil are prepared for the market. The following are the most important —

Jute is manufactured in Lower Bengal, opium in the United Provinces, Bengal, and Madras; tea in Assam, the Punjab, and South India; cotton in the Bombay Presidency, and on a smaller scale in almost every province; indigo in the provinces in which it is grown, and wool in the Punjab and United Provinces, rice mills, in which the grain is prepared for use, have been erected in Bengal, Madras, and Burma, and cigars are largely manufactured in Burma and the Madras Presidency.

MEANS OF COMMUNICATION.—There are about 34,000 miles of railway open for traffic in India, and additions are at present being made at the rate of about 1,000 miles every year. The great railway systems run inland from the chief ports—Calcutta, Bombay, Madras, Karachi, and Rangoon; the systems of the north and north-west meet at Delhi.

Railways connecting with Calcutta.—1. The East Indian Railway—2,300 miles of line—runs from Calcutta (Howrah) to Delhi and to Jubbulpore.

2. The Eastern Bengal and the Assam Railways carry the trade of the new province.

3. The Bengal and North-Western Railway—1,400 miles—connects Bengal with the United Provinces.

4. The Oudh and Rohilkand Railway—1,000 miles—extends from Moghal Serai to Saharanpur.

5. The Bengal-Nagpur Railway—1,700 miles—has two main lines from Howrah. One runs inland to Nagpur, the other follows the coast to Waltair, near Vizagapatam.

Connecting with Karachi.—6. The North-Western Railway—over 4,000 miles, and the most extensive railway system in the world—extends from Karachi to Jamrud on the frontier of Afghanistan, with a branch to Quetta, while a second main line runs from Lahore to Delhi.

Connecting with Bombay.—7. The Great Indian Peninsula Railway—2,800 miles—has two branches from Bombay, one to Jubbulpore, and another *via* Poona to Raichur.

8. The Bombay, Baroda, and Central India Railway—2,800 miles—connects Bombay with Delhi.

Connecting with Madras.—9. The Madras Railway—1,600 miles—connects Madras with Vizagapatam, and so with Calcutta (see No. 5 above), and also with Calicut on the west coast.

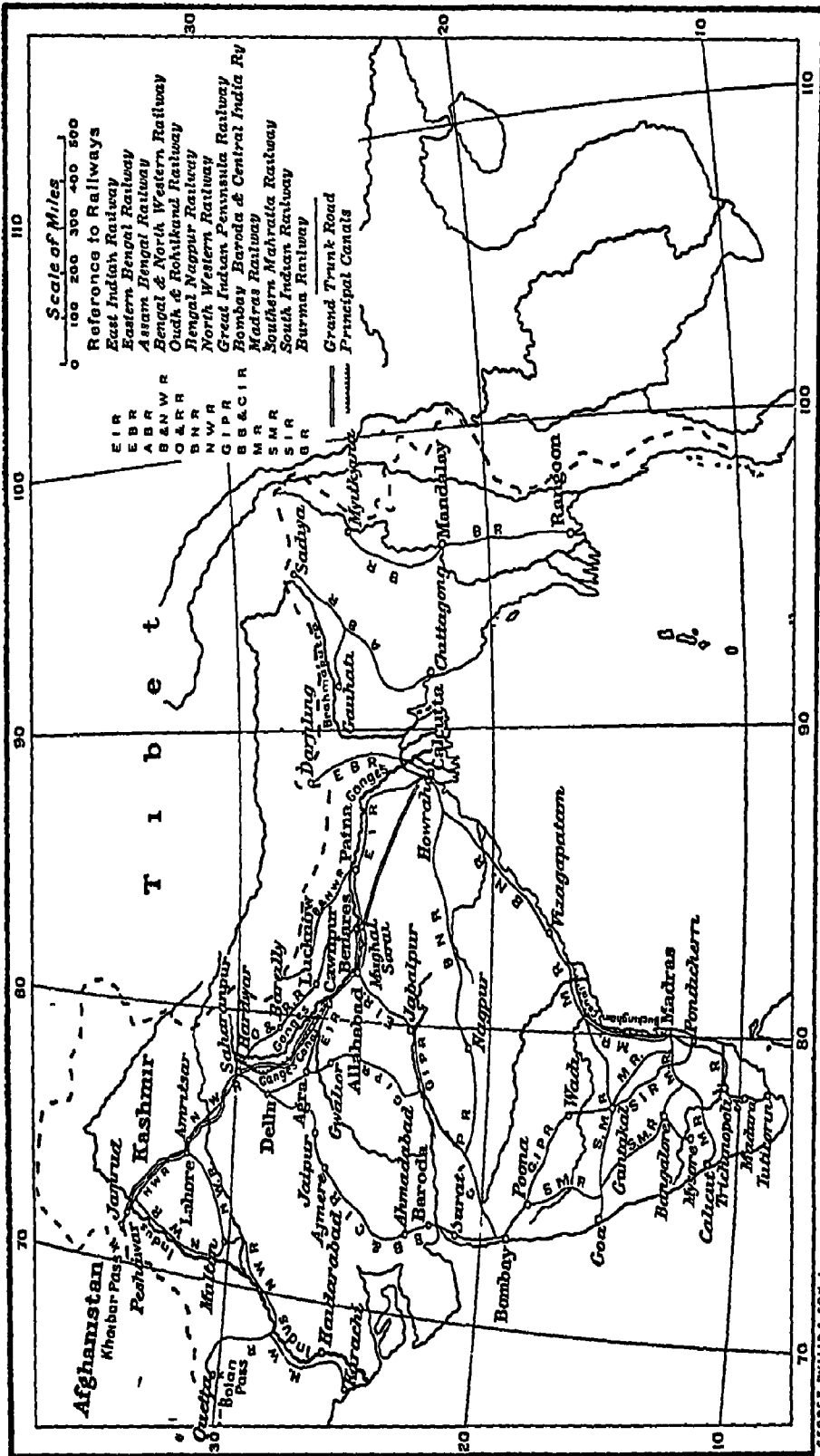
10. The South Mahratta Railway—1,600 miles—joins Poona, Bangalore, and Bezwada, and serves the southern Deccan.

11. The South Indian Railway—1,200 miles—has numerous branches over the tail of the peninsula.

Connecting with Rangoon.—12. The Burma Railway—1,200 miles—extends from Rangoon along the valley of the Irawadi as far as Myitkyina.

There are many other smaller systems and branch lines. Most of the Indian railways are in the hands of Government.

FIG. 50 — RAILWAY MAP OF THE INDIAN EMPIRE



THE LONDON GEOGRAPHICAL INSTITUTE

Longmans, Green & Co., London, New York, Bombay & Calcutta.

GEORGE PHILIPSON

Waterways.—Rivers and canals are largely used for navigation. Of the former, the Ganges, Brahmaputra, Irawadi, and the Indus are the most used. Of navigable canals, the Buckingham Canal—a salt-water channel parallel with the east coast—and the Ganges Canal, from Hardwar to Cawnpur, are the chief.

Roads.—The main roads of India are generally good, although those connecting the smaller towns and villages are still unmetalled. The Grand Trunk Road, from Calcutta to Peshawar, is over 1,500 miles in length.

TRADE.—Foreign.—The position of natural advantage which India commercially occupies, and the network of railways which link up all parts of the country with the chief ports, account for the extent of her trade; during the past ten years the annual value of the imports has grown from 99 to 228, and of the exports from 121 to over 256 crores of rupees.

It has already been pointed out that India is essentially an agricultural country and that her mining and manufacturing industries are but little developed. Agricultural products are therefore those of which there will be a superfluous supply, and minerals and manufactured goods will be in demand. These facts account for the nature of the exports and imports, and a careful study of the following lists will show how trade depends upon industry.

The chief exports in the order of total value are rice, wheat, raw cotton, oil-seeds, raw jute, manufactured jute, opium, manufactured cotton, hides and skins, tea, lac, raw wool, coffee, oils, indigo

The chief imports, also in order of total value, are manufactured cotton, metals and hardware, sugar, machinery, oils, woollen goods, silk, apparel, provisions, chemicals, drugs &c., liquors, railway plant, glass, and spices.

The value of the leading exports from the chief Indian ports is given below in crores of rupees —

Rice—Rangoon (23); Calcutta (7); Madras (1½).

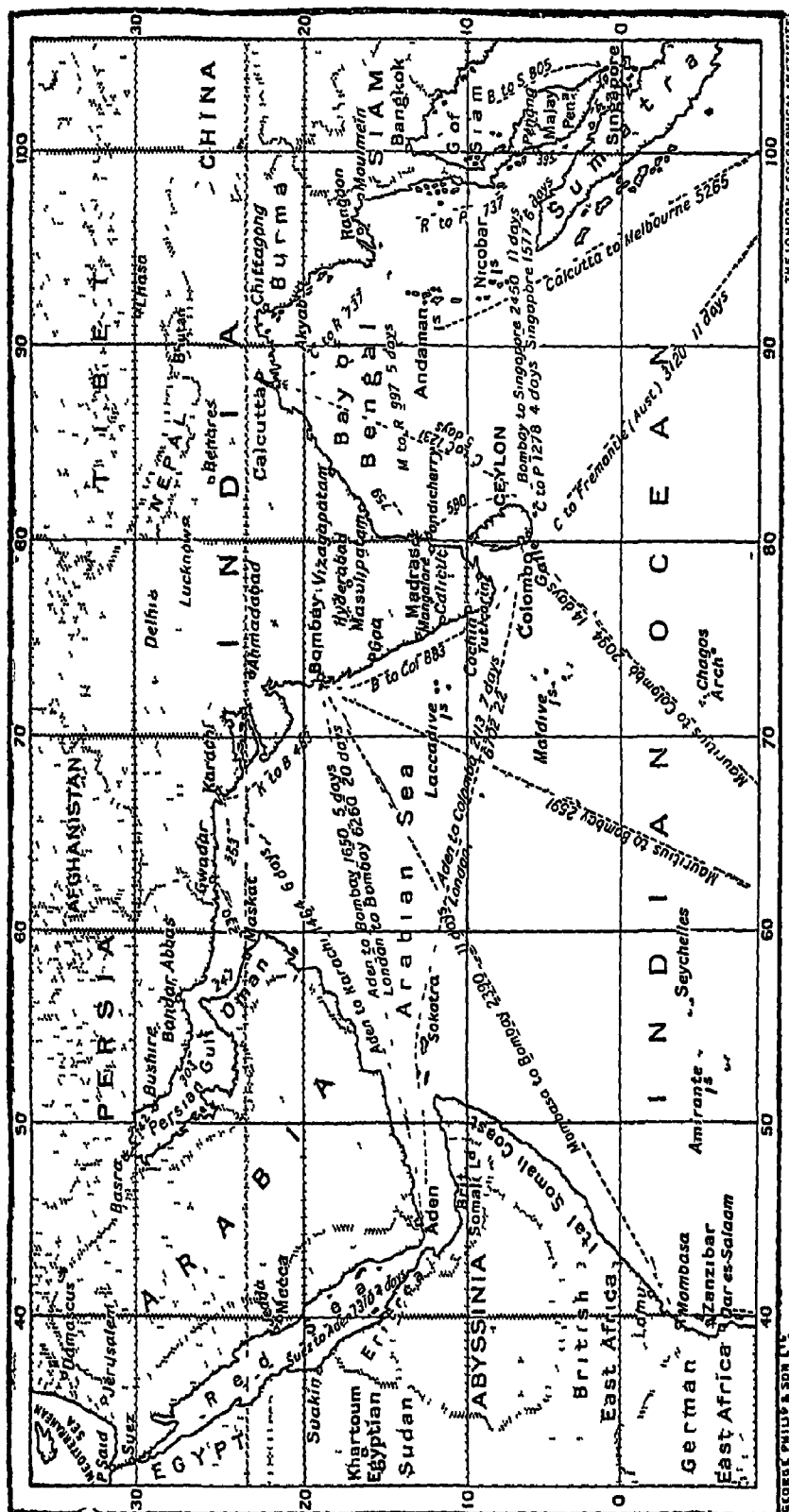
Wheat—Karachi (14); Calcutta (1½), Bombay (2½).

Cotton—Bombay (17½); Madras (4); Karachi (4½).

Oilseeds—Bombay (10½); Calcutta (4½), Karachi (3½); Madras (4½).

Coasting Trade —There are several small ports round the

Fig 50a — STEAM-SHIP ROUTES.



Longmans, Green & Co., London, New York, Bombay & Calcutta.

coasts of India and Burma, and regular sailings take place between these and the five large ports of the Empire.

Trans-frontier Trade.—This is carried on chiefly with Tibet on the north, and with Afghanistan and Persia on the west. The trade with Tibet is carried on *via* Darjiling and Leh in Kashmir, with Afghanistan through the Khaibar Pass, and with Persia through Quetta and the Bolan Pass. The lack of railways, however, hinders the development of trade on all India's frontiers.

GOVERNMENT.—The Indian Empire is a possession of Great Britain, and the King of England is its Emperor. Indian affairs in the British Parliament are under the special charge of the Secretary of State for India, who is assisted by a Council of Advisers, consisting of retired Indian officials of high standing, and others having an expert knowledge of Indian affairs.

For direct rule in India, the Emperor appoints a Viceroy, who bears the official title of Governor-General. He presides over two Councils. The first is a kind of Cabinet, called the Viceroy's Council, and consists of six members, who are in charge of various departments, as well as himself and the Commander-in-Chief, who is an extraordinary member. The departments are for—Finance, Foreign, Home, Legislative, Revenue and Agriculture, Public Works, Commerce and Industry, Army, and Military Supply. The second is the Legislative Council, for making laws and regulations, which is partly elected and partly nominated. The members of the Viceroy's Council belong also to the Legislative Council. Delhi is now the capital.

The Empire is divided for purposes of administration into provinces

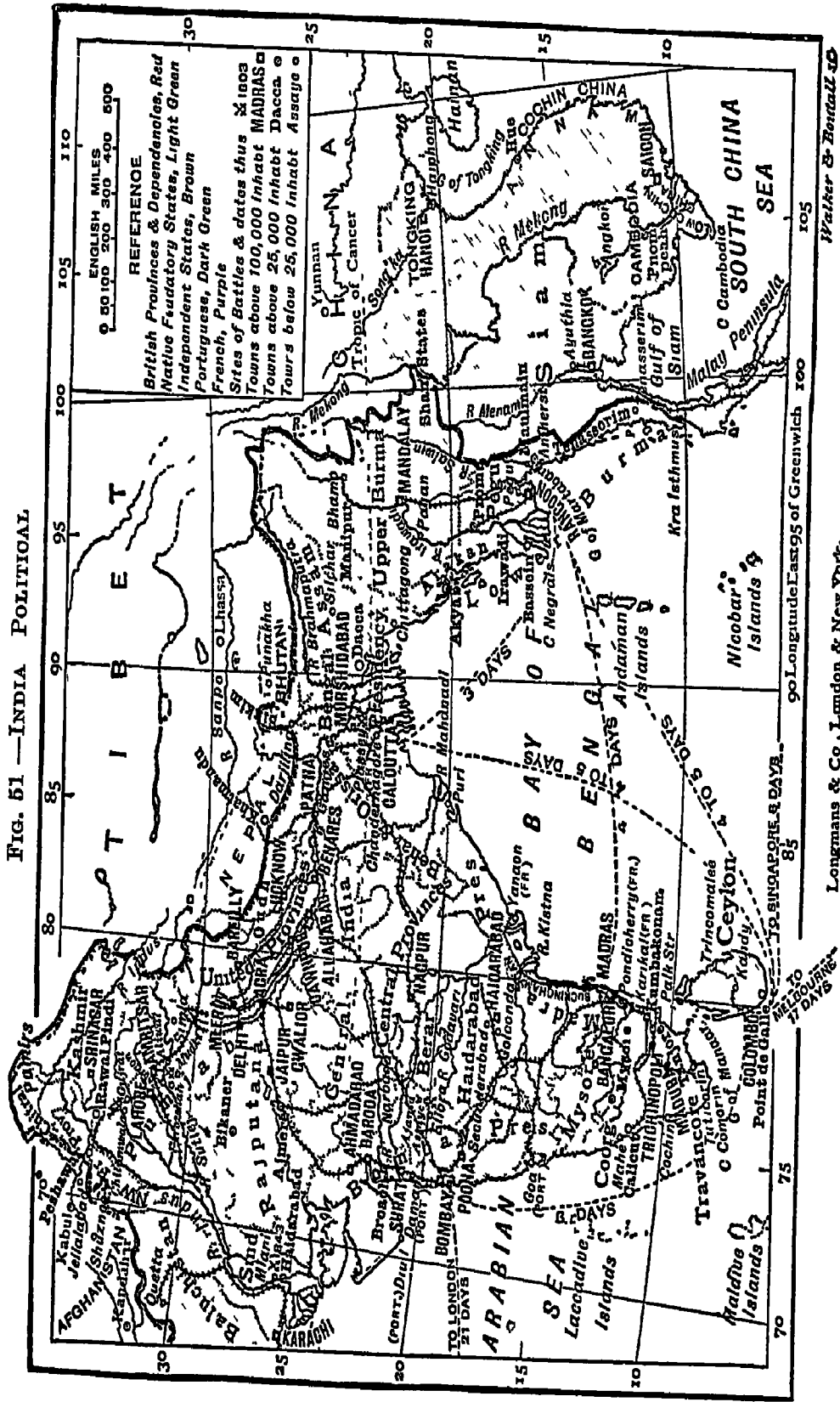
Three Governors, those of Bengal, Madras, and Bombay, are also nominated by the Emperor. All other rulers are appointed in India by selection from the most distinguished members of the Civil Service.

Four provinces are administered by Lieutenant-Governors—namely, Bihar and Orissa, Burma, the United Provinces, and the Punjab.

NOTE.—Eastern Bengal has been re-joined to Bengal and Assam has been given a separate government. A new province has been formed of Bihar and Orissa.

Provinces or districts of smaller population or less importance

FIG. 51 —INDIA POLITICAL



Walker & Bondall

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are under a Chief Commissioner. Such are the Central Provinces, Assam, the North-West Frontier Province, Baluchistan, Ajmere-Merwara, Coorg, and the Andaman and Nicobar Islands.

Many states are under the control of their own princes or *Rajas*. In the largest of these, British interests are watched by a Resident or Agent, who communicates direct with the Government of India. Such are Kashmir, Haidarabad, Mysore, the Central India Agency States, and the Rajputana States. Smaller native states are controlled by the Local Government of the province in which they are situated.

There are now only two independent states in the Indian Empire; they are Nepal and Bhutan.

The Foreign Possessions situated within the limits of the Empire are insignificant. The French and Portuguese have a few settlements on the coasts of the peninsula—remnants of larger possessions in former times.

The Laccadive Islands are under the control of the Governor of Madras, and the Maldive Islands under the Ceylon Government. Aden is administered by the Governor of Bombay.

EXAMINATION PAPERS

- A 1 What are the chief races inhabiting the Indian Empire? In what parts of the country do they dwell?
- 2 Mention the chief forms of religion represented in India. What proportion of the people profess each religion?
- 3 What are the chief food-products of India? Where are they grown?
- 4 Where are the following languages spoken:—Uriya, Pushtu, Brahui, Canarese, Telugu?
- B 1 What are the most important mineral products of the Indian Empire? Where are they found, and to what extent are they worked?
- 2 Mention the chief fibrous plants cultivated, and say to what extent the raw product is manufactured.
- 3 By what railways would you proceed from Calcutta to Delhi, Delhi to Bombay, Bombay to Madras, Madras to Calcutta? Illustrate your answer by a map.
- 4 Give a complete list, with situations, of the Provinces, Protected States, Foreign Possessions, and Independent Territory in India.

PROVINCES.—1. BENGAL

1. HISTORY.—The first British possession in the lower Ganges valley was acquired by Clive in 1764; the province extended east and west as new territory came under British power, and early in the nineteenth century included Assam and the area now known as the United Provinces. In 1836 these provinces were placed under a separate administration, and in 1874 Assam was cut off. In 1905 a further redistribution was made: Eastern Bengal was joined to Assam and raised to a Lieutenant-Governorship, and an exchange of districts was effected between Bengal and the Central Provinces. Eastern Bengal was re-united to Bengal in 1912 and Assam made into a separate Province. Bengal was made into a Presidency.

2. BOUNDARIES AND EXTENT.—The boundaries of the province as now defined are:—

on the east —by Assam.

on the north —the Sikkim boundary.

on the west —by Bihar and Orissa

on the south —by Bihar and Orissa and the Bay of Bengal.

The extent is about 80,000 sq miles.

3. PHYSICAL FEATURES —Relief.—The surface of Bengal consists of an alluvial plain in the north, drained by the Ganges and a large network of tributaries.

A low range—the **Rajmahal Hills**—runs north and south, causing the bend in the Ganges, where it turns south before entering the delta.

Rivers—The province is watered by the lower courses of the Ganges and Brahmaputra, both of which form large deltas. Three hundred miles from the sea the delta commences, and spreads over that extensive jungle-covered area known as the **Sundarbans**. The most important branch of the delta is the western one—the **Hugli**—on which stands Calcutta and which receives the waters of the **Damodar** and **Rupnarain**. **Diamond Harbour** stands at its mouth, and it is protected seawards by **Saugor Island**, which does not, however, prevent a large boat from travelling up the river occasionally.

4 CLIMATE AND RAINFALL—The Tropic of Cancer bisects the province, and the climate is therefore tropical. The

proximity of the sea and the abundant rain render the climate also moist and equable.

The rainfall is regular, and amounts on the average to nearly 60 inches in a year.

FIG 51a.—BENGAL, BIHAR AND ORISSA RELIEF.



5 PEOPLE.—The population is 455 lakhs, or 578 to the square mile, *i.e.* the most densely populated part of India. A large part of the population is Hindu. The chief languages spoken are Bengali and Hindi.

6. OCCUPATIONS—Agriculture is the employment of the

vast majority of the people. The crops raised are rice, jute, oil-seeds, tea, the poppy, sugar-cane, tobacco, indigo, millet, and wheat in the north-west

Manufactures are chiefly connected with agriculture—jute in the lower Ganges basin, tea-making near Darjiling, opium round Patna, paper and soap are made at Calcutta.

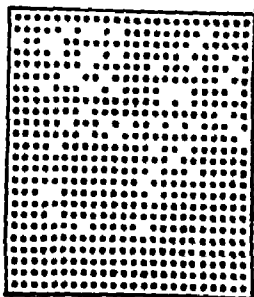
Mining.—Coal is dug at Raniganj and other places; at the former place it is found associated with iron

7. GOVERNMENT.—The Presidency is ruled by a Governor, who is assisted by an Executive Council. For purposes of local administration it is divided into five divisions—Bengal proper (or the Presidency Division), in the lower Ganges valley; Burdwan, Rajshahi, Dacca and Chittagong. The native state is Sikkim in the north.

8. TOWNS.—Most of the large towns of Bengal have sprung up on the banks of the Ganges and its numerous tributaries, but since railways have superseded river communication they have all been connected by rail. Calcutta (1,222,000) is the capital of Bengal, the second city in point of population in the British Empire, and the first port and the second manufacturing city of India. It stands on the Hugli, about 86 miles from the mouth. The passage of the river is difficult owing to sand-banks and changes in the bed, and it is only kept navigable at considerable cost. But the extent of the area tapped, and the immensity of the population supplied by this port, account for the way in which it retains the first place in trade and tonnage. The proximity of Calcutta to the Raniganj coal-fields has given a great impetus to its manufactures, and it is now the leading jute-manufacturing city in the world

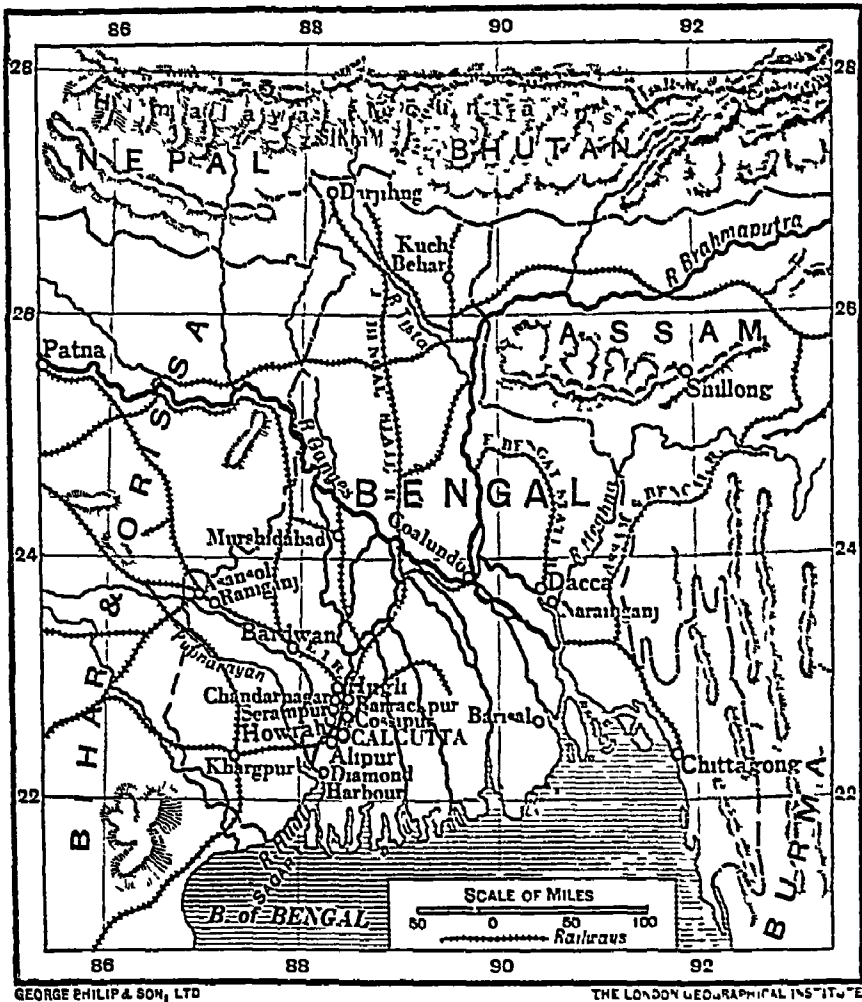
Howrah, on the west bank of the Hugli, is the manufacturing suburb of Calcutta, and the terminus of important railways. The population (180,000) is included in that of Calcutta given above. Other important suburbs are Alipur, and Cossipur, which has a Government gun-factory.

FIG 52 —AVERAGE
POPULATION OF A
SQUARE MILE OF
BENGAL



Dacca (108,000) is a smaller city than it was two hundred years ago, when it was the capital of the eastern Muhammadan kingdom, but it has gradually increased during the past fifty

FIG 53 — MAP OF BENGAL



Longmans, Green & Co., London, New York, Bombay & Calcutta.

years. The city lies about 10 miles above Narainjan, its port at the mouth of the Brahmaputra. It has a considerable jute manufacture.

Chittagong had, at the last census, a population of only 22,000, but it is a rising port with considerable trade. The produce of Assam comes down either by rail to Chittagong or to Calcutta by the Brahmaputra. The exports are therefore tea and timber from Assam, and rice and jute from the eastern part of Bengal.

The river traffic on the Brahmaputra has given growing importance to several river ports on its banks. The chief are Goalpara, Gauhati, Sibsagar, and Dibrugarh, in Assam. Goalando, in Bengal, stands at the junction of the Brahmaputra and Ganges.

Bengal is served by four chief railways, viz. the Bengal and North-Western north of the Ganges, the East Indian in the middle of the province, the Bengal-Nagpur Railway in the south, and the Eastern Bengal State Railway which runs north to Darjiling and east to Goalando.

Towns on the East Indian Railway—The first section of this line is from Howrah to Bardwan, 'a city of 73 villages' and the stations passed are Serampur, with its jute mills, on the opposite side of the river to which stands Barrackpur, where the Governor has a residence; and Hugli, a river port of some importance, near which is the French settlement of Chandarnagar.

At Bardwan the line divides and forms a loop, the two lines reuniting at Mokamah. One branch follows the course of the Ganges, and the other—the main line—goes by a more direct route to Patna, in the Bihar and Orissa Province. The main line taps the coalfields of Raniganj and Giridhi, forming a junction with the Bengal-Nagpur Railway at Asansol.

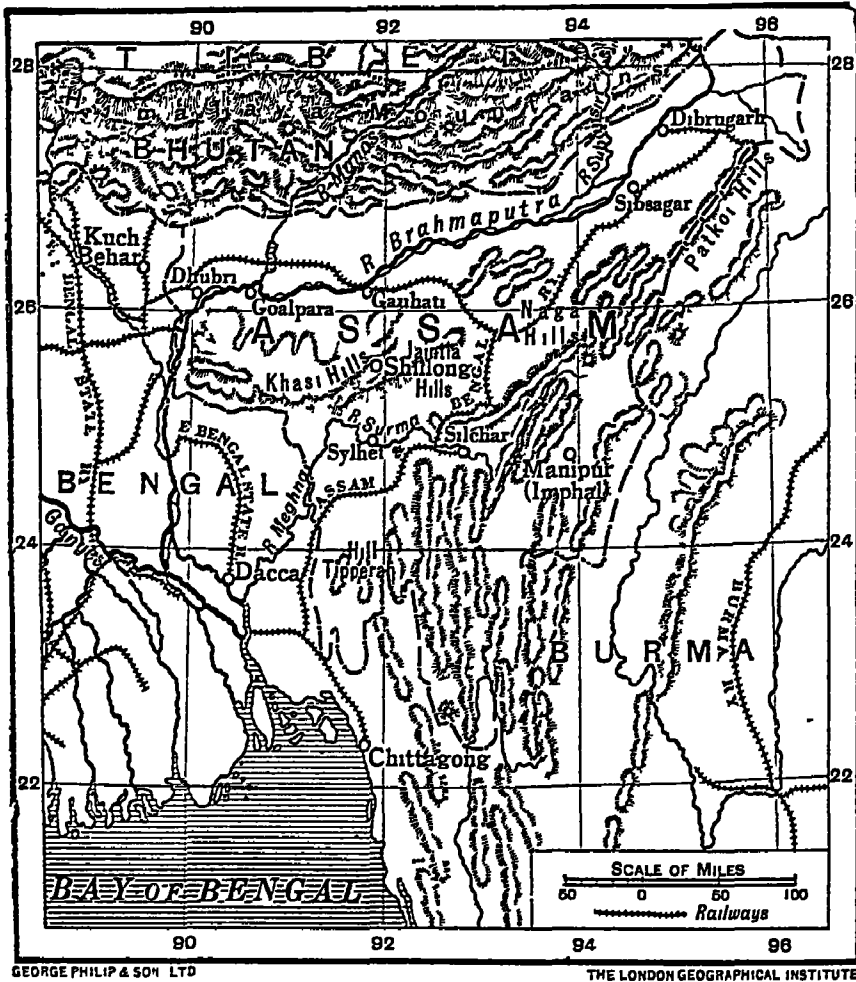
Darjiling, the summer capital of the province, south of Sikkim, is approached by a mountain railway, 'a masterpiece of engineering skill'. From here magnificent views of the highest peaks of the Himalayas are obtained.

2 ASSAM.

1. HISTORY—The Chief Commissionership of Assam was united to the Rajshahi, Dacca, and Chittagong divisions of Bengal in 1905, and the whole made into a Lieutenant-Governorship, with headquarters at Dacca, which was the Muhammadan capital over three centuries ago. In 1912 Eastern Bengal was re-united to Bengal and Assam was made into a separate Province. Assam came gradually into the Empire—the western portion as far back as the middle of the

eighteenth century, when British rule in Northern India was in its infancy under Clive; and the remoter portions at intervals later, until, after the last annexation in 1865, the political boundary very nearly coincided with the geographical boundary, viz. the Himalaya Mountains on the north, and the North Burma hills on the south

FIG 54—MAP OF ASSAM



Longmans, Green & Co, London New York, Bombay & Calcutta.

2 BOUNDARIES AND SIZE—The extent of the province is 53,000 sq miles. It is bounded on the north by Tibet and Bhutan, on the west by Bengal, and on the south-east by Burma.

3. PHYSICAL FEATURES—Relief.—Assam occupies the

eastern and narrower end of the great plain of Northern India. The western portion of the province is low and level, but in proceeding eastwards the plain divides into two valleys—those of the Brahmaputra and Surma Rivers—which are separated by a tongue of hilly land running east and west and known in different parts as the Garo, Khasi, and Jaintia Hills.

The northern boundary of Assam is traversed by offshoots from the Himalayas, and the hills of Upper Burma extend into the province on its south-eastern border. The chief ranges here are the Patkoi Mountains and the Naga and Lushai Hills.

In the south the land is high, and is crossed by the Chittagong and Tipperah hill ranges.

Drainage.—The province is drained by the Brahmaputra and its numerous tributaries, of which the chief are the Subansiri, the Manas and the Tista from the north, and the Surma from the east, which flows into the Meghna, the great branch of the Ganges on the eastern side of the delta.

4 CLIMATE AND RAINFALL.—The climate varies with the locality and the elevation. On the plains in the west the climate is similar to that of Bengal—warm and damp. The Brahmaputra valley, being further inland, is more subject to extremes, although it is neither so hot in summer, nor so cold in winter, as in the Punjab to the north-west of India.

The rainfall is everywhere abundant during the monsoon months, and parts of Assam, especially the Khasi Hills, have the heaviest rainfall in the world.

5. PEOPLE—The total population is about 70 lakhs. Hinduism is the religion of the people of the Brahmaputra valley, and many of the hill tribes are fetish worshippers. Proximity to Burma accounts for the numbers of Buddhists in the south-east.

6 OCCUPATIONS—Only the valleys are cultivated, tea and rice being the most important crops. A large portion of the country consists of forests. Rubber is extracted from the india-rubber tree, and timber is cut for export. Cocoons are collected in the forests, and tussar or Assam silk is woven. Sal-wood and bamboos are cut from the jungle.

Coal is mined in small quantities in the hills south of the Brahmaputra.

The chief exports are tea and timber.

GOVERNMENT—The province is under a Chief Commissioner, who resides at Shillong.

There are three native states of importance —Manipur lies in the mountainous region on the borders of Burma. The capital is Imphal (74,000). Hill Tipperah, another mountainous state, lies in the south. Kuch Behar is a small state, not far from the south-western border of Bhutan.

TOWNS—The province is singularly deficient in large towns, but there are many which are becoming commercially more important, and are consequently growing in population.

In Southern Assam, Shillong, a sanatorium, Sylhet, near Cherrapunji, the wettest place in the world; and Silchar, the centre of the Cachar tea-planting industry, are the chief towns, but none has a population of 20,000.

Gauhati is the chief steamer station on the Brahmaputra, and will remain a place of great importance while the produce of the country is borne by water. Another station farther up the river is Dibrugarh, near the important town of Sibsagar.

3. BIHAR AND ORISSA.

This new province was constituted in January 1912. It comprises the districts of Bhagalpur, Patna, Tirhut, Chota Nagpur, Muzaffarpur, and Orissa, and formerly formed the south-western part of Bengal. It stretches from the Bay of Bengal to the Ganges. It is mainly a hilly country sloping away to the Plain of the Ganges in the north. The highest point of these hills is Parasnath in the valley of the Damodar, which is just below 4,500 feet in height.

RIVERS—The province is watered by the Ganges and its tributaries Son and Damodar in the north, and by the Mahanadi and its tributaries in the south.

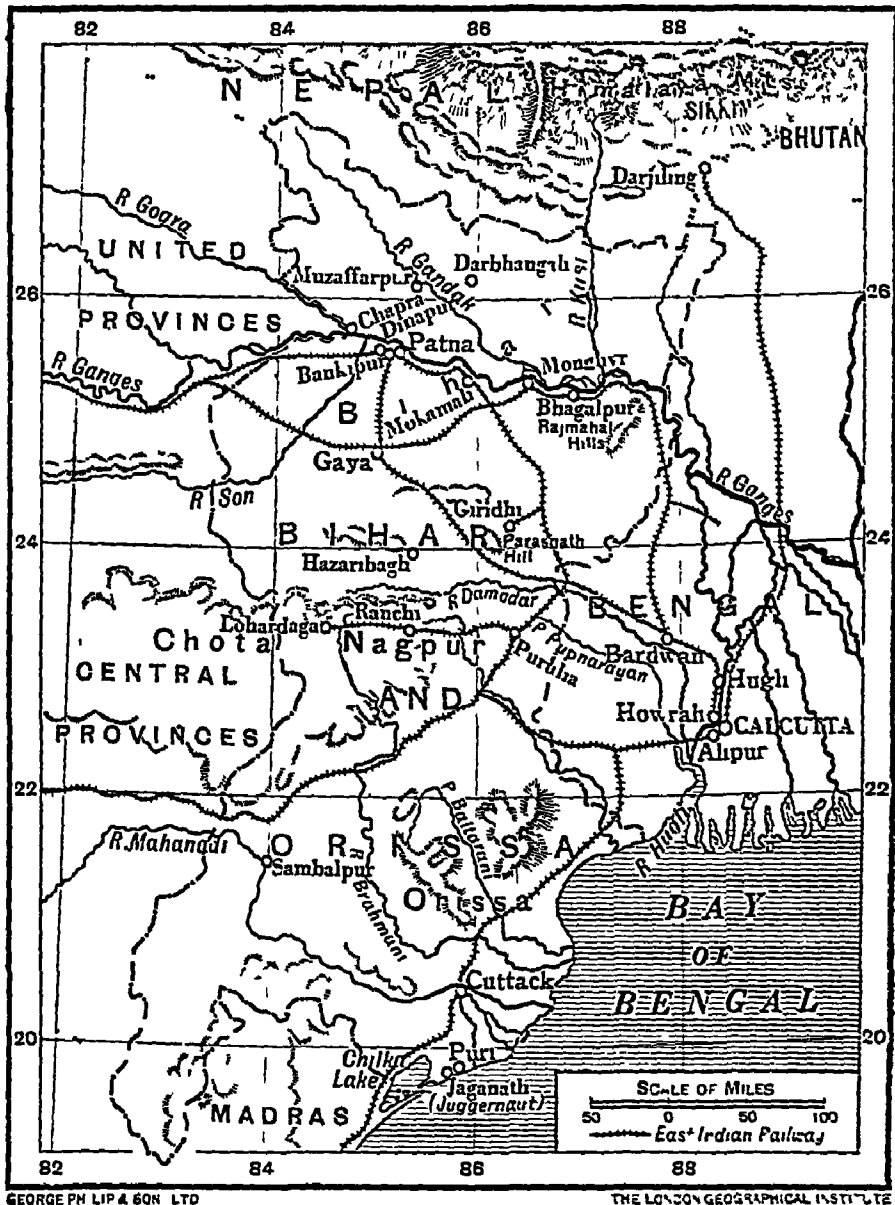
CLIMATE.—Moist and equable, with sufficient rainfall.

OCCUPATIONS.—Most of the people are employed in

agriculture, and the chief crops are rice, tea, sugar, tobacco, and wheat

Coal is dug at Giridih and other places, and mica at Hazari-bagh. Valuable deposits of copper, manganese, and aluminium in Chota Nagpur

FIG 55 —MAP OF BIHAR AND ORISSA



Longmans Green & Co London, New York, Bombay & Calcutta

GOVERNMENT—Bihar and Orissa is governed by a Lieutenant-Governor who is assisted by a Legislative Council
POPULATION (1912)—34,750,000, mainly Hindus

AREA.—83,000 square miles

The most important towns are —

Patna, with **Bankipur** and the military station of **Dinapur**, is the capital town, and has a population of nearly 136,000. It was formerly of greater commercial importance than at present, being near the junction of several large rivers. From **Patna** a branch railway runs to **Gaya**, the most important Buddhist centre in India.

Ranchi, in **Chota Nagpur**, is the summer capital.

Bhagalpur, **Monghyr**, and **Muzaffarpur** are also important towns.

Cuttack, the chief town of **Orissa**, stands at the head of the **Mahanadi Delta** and is famous for its silver filagree work.

Puri is a place of Hindu pilgrimage.

4. THE UNITED PROVINCES OF AGRA AND OUDH

HISTORY—The territory included within the province of **Agra** originally formed part of the **Bengal Presidency**, but in 1836 efficient administration called for its separation, and it was then raised to the status of a **Lieutenant-Governorship** under the name of the **North-Western Provinces**. At that time this name was very appropriate, for the province formed the north-western limit of the **British Empire** in India. But after the annexation of the **Punjab** in 1849 the name was a misnomer, so in 1901, when the **North-West Frontier Province** was separated from the **Punjab**, the more historic name associated with the ancient kingdoms of **Agra** and **Oudh** was adopted.

The kingdom of **Oudh** has been under British administration since 1856, and for twenty-one years was administered separately by a **Chief Commissioner**. But as it lies entirely within the province of which it now forms a part, the two were united under one administration in 1877.

BOUNDARIES AND EXTENT—The area is about 107,000 sq miles. It has natural boundaries along two sides—namely, the **Himalaya Mountains** on the north, and the **Jumna** on the west. The territories which surround it are—**Tibet** and **Nepal** on the north, the **Punjab** and **Rajputana** on the west, **Central India** on the south, and **Bihar** on the east.

POPULATION (1911)—47 millions (7 millions being **Mahomedans**).

PHYSICAL FEATURES.—Relief.—The only mountainous portion of the United Provinces is in the north-west, where a considerable area between Nepal and the Punjab penetrates far into the interior of the Himalaya system. Many snow-clad peaks reach a height of over 20,000 ft, Nanda Devi, which is near the sources of the Ganges, Indus, Sutlej, and Brahmaputra,

FIG 55a —THE UNITED PROVINCES OF AGRA AND OUDH : RELIEF.



being 25,600 ft above sea-level. Lying south of the main range and separated from it by the Dun Valley is the low range of the Siwaliks, about 2,000 ft in height

But the major portion of the provinces forms a part of the great plain of Northern India, which is separated from the Himalayas by densely-wooded tracts

DRAINAGE.—The United Provinces is one of the best

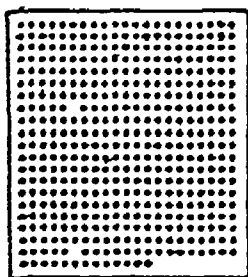
watered districts in India, and is consequently, area for area, the most densely populated part of the whole country. The Jumna, and later the main stream of the Ganges, flow along the southern border of the province, and the streams by which it is drained—the Ganges and its left bank tributaries—flow in more or less parallel courses across the plain from north-west to south-east. Taken in order they are the Jumna, Ganges, Ramganga, Gumti, and the Gogra, with its two feeders the Sarda and Rapti. The only stream from the south which drains a considerable area is the Betwa, a tributary of the Jumna.

CLIMATE AND RAINFALL.—The climate is less equable than that of Bengal, yet not so extreme as in the Punjab. The summer is hot, especially before the monsoon, but the winter months are cold. The United Provinces are only just within the monsoon region, and the rainfall is consequently not so heavy as it is further east. But whatever deficiency may exist in the rainfall is compensated for by the rivers, and the irrigation channels which have been made.

PRODUCTS.—The United Provinces stand first in India in the production of millets and similar food grains, and sugarcane. They stand second only to the Punjab in the production of wheat. Other very important crops are the poppy, rice, oilseeds, cotton, and indigo. Tea is grown in the Dun, and on the lower hill slopes.

PEOPLE.—The United Provinces have the highest density of population of all the provinces, viz 440 to the square mile. The total population is 470 lakhs, of which 400 lakhs are Hindus and 70 lakhs Muhammadans. The language of the majority of the people is Hindi.

FIG 56 — AVERAGE
POPULATION OF A
SQUARE MILE OF
UNITED PROVINCES
—AGRA AND OUDH.



As in other parts of India, the inhabitants of the United Provinces live mostly in villages, but there are seven cities with a population of over a lakh—more than in any other province. They are Lucknow, Benares, Cawnpur, Agra, Allahabad, Bareilly, and Meerut.

OCCUPATIONS.—The chief industry

is agriculture: the crops are those enumerated above under 'Products.'

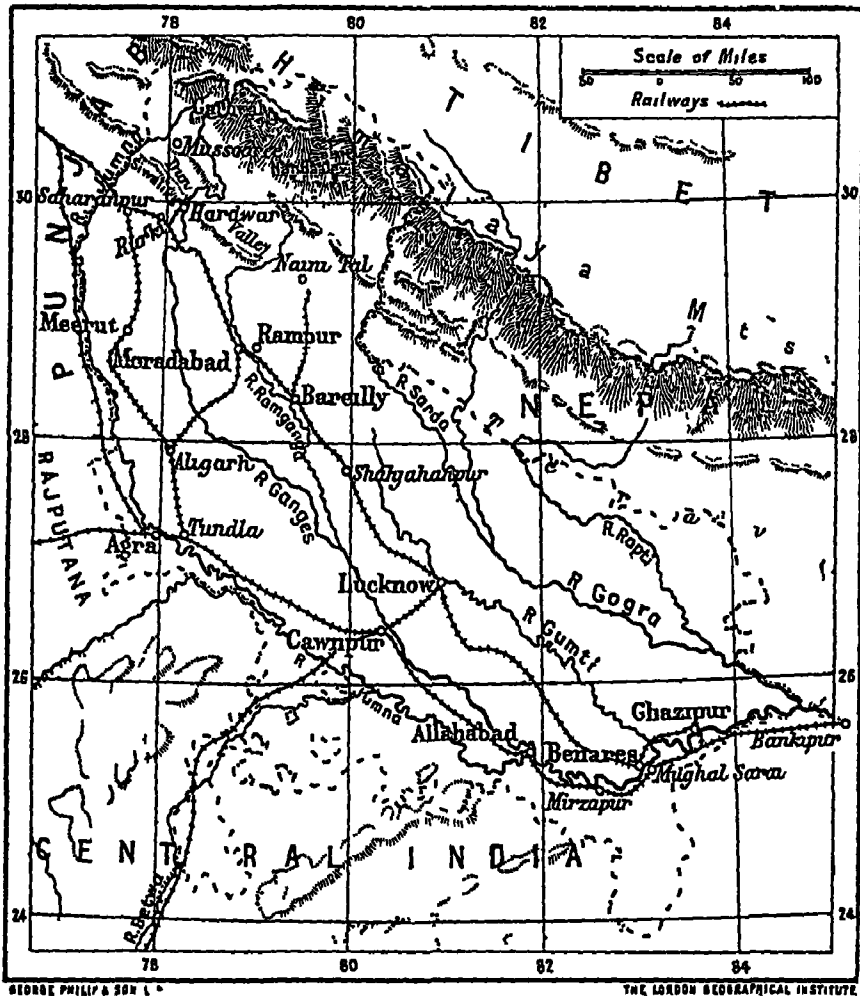
There are some important manufactures

Cotton goods are made at Cawnpur, and carpets at Mirzapur.

Leather goods are also produced on an extensive scale at Cawnpur.

Metalwork is indigenous to Benares and Moradabad.

FIG. 57 — MAP OF THE UNITED PROVINCES



Longmans, Green & Co. London, New York, Bombay & Calcutta.

Sugar, indigo, and opium are manufactured. The centre of the Government opium monopoly is at Ghazipur.

Tea is grown and manufactured in the Dun.

GOVERNMENT—The United Provinces are ruled by a Lieutenant-Governor, who is assisted by a Legislative Council. The headquarters of the Government are at Allahabad in the cool

months and at Naini Tal in the summer. The provinces have nine divisions, as compared with five in the Punjab—the larger number being occasioned by the greater population.

There are two native states, both in the north-west. Garhwal is a mountain state, bordering Tibet on the north and the Punjab Hill states on the west. Rampur, further south, is a smaller state.

TOWNS.—Most of the large cities are on the banks of the Ganges and its tributaries, as these were formerly the chief commercial highways, and the Ganges has always been regarded by the Hindus with great veneration. They are now, however, connected by railway, the main lines which run through the provinces being the East Indian, the Oudh and Rohilkand, and, in the west, the North-Western Railway. Commencing at Bankipur, in Bihar and Orissa Province, the East Indian Railway follows the course of the Ganges, on its south bank, as far as Cawnpur, a distance of nearly 350 miles. The chief towns passed on this line are Mirzapur, Allahabad, Cawnpur, Tundla (the junction for Agra), and Aligarh.

Mirzapur (32,000) is an important centre of the cotton trade, and has manufactures of carpets and rugs.

Allahabad (172,000) is the capital, and owes its name and its importance to its position at the junction of the two sacred streams—the Ganges and the Jumna. As a sacred city it has an important religious fair, held annually, and as a commercial town it is a distributing rather than a manufacturing centre.

Cawnpur (178,000) is one of the most important manufacturing and railway centres in India. Besides the East Indian, the following railways run into Cawnpur—the Bengal and North-Western and the Oudh and Rohilkand from Lucknow, the Bombay, Baroda and Central India from Agra, and the Great Indian Peninsula Railway from Jhansi. The town has very considerable manufactures of leather and leather goods—boots, saddlery, &c.—and of cotton fabrics.

Agra (185,000) was formerly one of the Moghal capitals, and now again gives its name to the province. It is a city of considerable trade, but it owes its fame to its magnificent buildings, erected chiefly by Akbar and the great king builder, Shah Jahan. The Taj Mahal, which the latter raised as a tomb for his wife, is

one of the most beautiful buildings in the world—'a dream in white marble.'

Algarh is known as the centre of Muhammadan learning in India.

The Oudh and Rohilkand Railway runs from Moghal Serai, where it joins the East Indian, to Saharanpur, its junction with the North-Western Railway. The chief stations passed are Benares, Lucknow, Shahjahanpur, Bareilly, Rampur, Moradabad, Hardwar, and Rurki.

Benares (204,000) is a city sacred to the Hindus, and containing many temples. Large numbers of pilgrims visit the city annually. There are brass manufactures of some importance

Lucknow (260,000), the chief city in Oudh, and the most populous in the United Provinces, is about 190 miles from Benares by rail. It has several buildings of historic interest, chief among which is the Residency, which withstood a siege of three months in the Mutiny of 1857. Its manufactures are local and unimportant

Shahjahanpur (72,000) is the centre of a thriving sugar industry.

Bareilly (130,000), although one of the largest towns in the province, is not of great commercial importance.

Rampur (74,000), the capital of the native state of the same name, is the place at which the celebrated shawls were first made.

Moradabad (81,000) has manufactures of brassware and sugar.

Hardwar is a small town, but is an important place of Hindu pilgrimage. It stands on the Ganges at the place where it enters the plain.

Rurki, only a few miles from Hardwar, has a large engineering college.

At Saharanpur (66,000) the Oudh and Rohilkand Railway joins the North-Western system.

The North-Western Railway runs from Saharanpur, *via* Meerut and Ghaziabad, to Delhi.

Meerut (116,000) is a large military station. The Mutiny broke out here in 1857.

The United Provinces have several flourishing hill-stations.

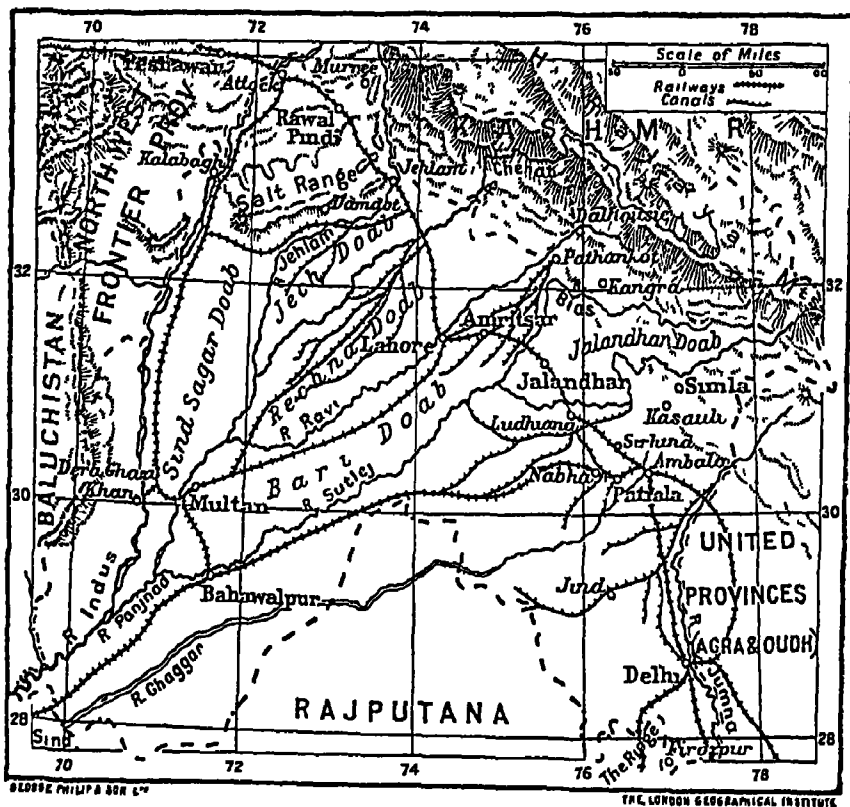
Naini Tal, connected nearly the whole way by rail with Bareilly, is the summer capital.

Mussooree, above the Dun, is reached from Saharanpur.

5. THE PUNJAB

HISTORY.—The position of the Punjab on the line of march of armies invading India through the passes of the north-west

FIG 58—MAP OF THE PUNJAB

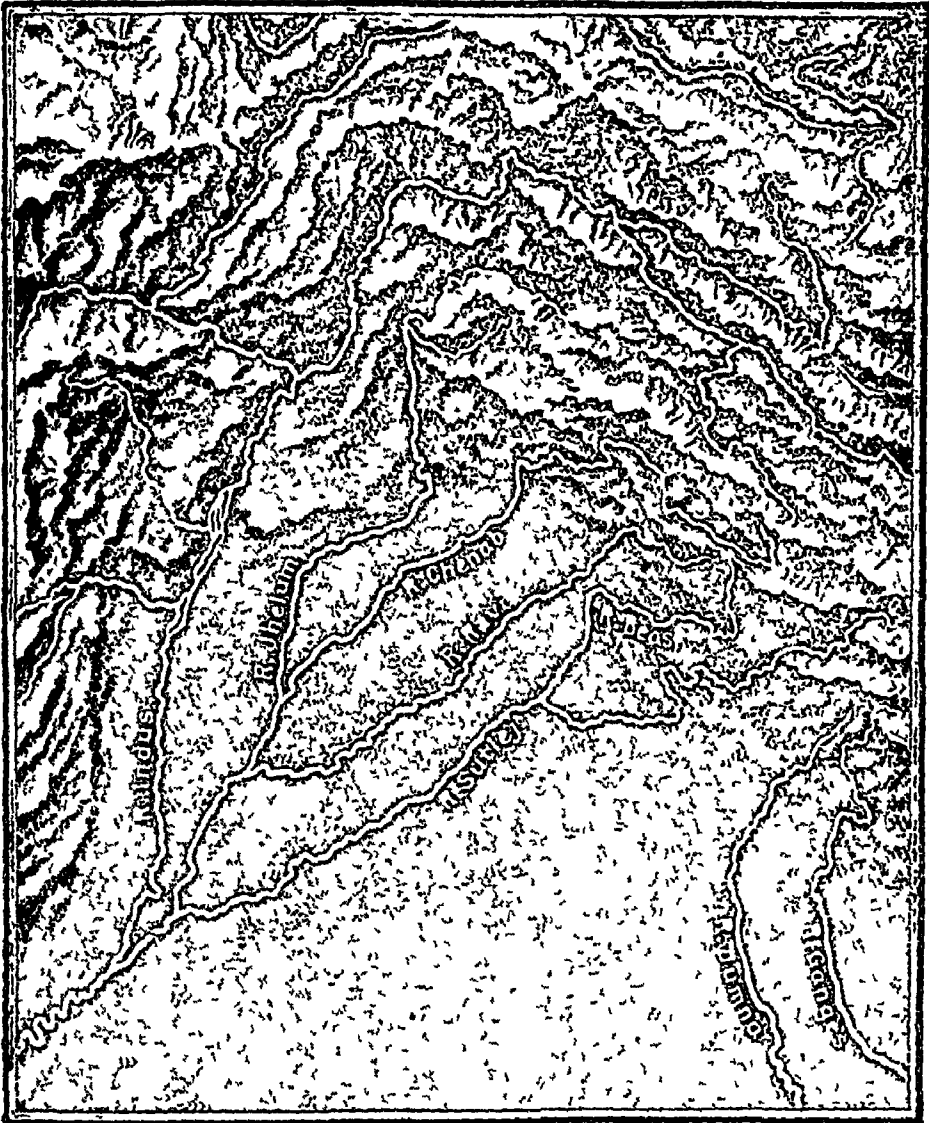


Longmans, Green & Co. London, New York, Bombay & Calcutta.

has had considerable influence on its history. Alexander of Greece invaded the country in 327 B.C., and during the past thousand years the Ghazni, Ghori, and Moghal conquerors have come through this province. The Punjab has also been the region of division between the Brahmanic religion of Hindustan and the Muhammadanism of south-west Asia. This may have accounted for the rise here of the 'monotheistic form of Hinduism'—the religion of the Sikhs—which was founded by Guru

Nanak in 1469. The Sikhs became a strong nation, and under Ranjit Singh, the 'Lion of the Punjab,' attained their greatest power. The kingdom of Ranjit Singh was annexed by the

FIG. 58a —THE PUNJAB: RELIEF.



British in 1849, the territory east of the Sutlej having come under British rule early in the nineteenth century.

BOUNDARIES AND SIZE.—The Punjab boundaries run more or less north and south on the eastern and western sides, but Kashmir on the north and Rajputana on the south run so

far into the province as to bring their borders within 200 miles of each other. The River Sutlej and a line from Attock to Delhi thus form two diagonals which cross close to Lahore.

The Punjab is bounded by the United Provinces of Agra and Oudh on the east, Kashmir on the north, the North-West Frontier Province and Baluchistan on the west, and Sind and Rajputana on the south. Natural boundaries are the Himalaya Mountains on the north, the Jumna on the east, and the Indus on the west. The area of the province (including native states, 36,500 sq. miles) is nearly 134,000 sq. miles.

PHYSICAL FEATURES.—The major portion of the surface consists of a great, almost unbroken plain. In the north the territory of the Punjab extends into the Himalaya system, and from the great range the land resembles a low plateau, shelving down to the plains. In the north-west the Salt Range extends from the vicinity of Jehlam to Kalabagh on the Indus, and in the south-east the Ridge—the northern extension of the Aravalli Hills—runs as far as Delhi.

The great feature of the province is the River Indus, with its five tributaries (from which the name Punjab is derived) extending like the fingers of a hand across the province. The united stream which eventually joins the Indus is known as the *Punjad*, and is made up of the Chenab and the Sutlej. The former receives the Jehlam River on the right bank and the Ravi on the left, while the Sutlej brings the waters of the Beas

The doabs between these streams are naturally very fertile, but owing to the absence of small tributaries they have to be irrigated. The names given to the doabs are —

- (1) Between the Indus and Jehlam—the *Sind Sagar* Doab.
- (2) Between the Jehlam and Chenab—the *Jech* * Doab.
- (3) Between the Chenab and Ravi—the *Rechna* * Doab
- (4) Between the Ravi and Beas—the *Bari* * Doab
- (5) Between the Beas and Sutlej—the *Jalandhar* Doab

The eastern part of the province is watered by the Jumna, and to the south of the Sutlej, and roughly parallel with it, is the Ghaggar, a considerable stream which, rising in the Simla Hills,

* It will be observed that these names are formed by the combination of the initial sounds of the names of the rivers between which they lie

eventually loses itself in the Rajputana Desert. Large areas in the south-east and south-west are unwatered and consequently unproductive.

CLIMATE AND RAINFALL.—The Punjab is outside the real monsoon area, and the rain it receives during the summer monsoon is due to a deflection westwards of the current after striking the Himalayas. Hence the rainfall is low—about 20 inches at Lahore, and still less further west and south. This absence of rain and other moisture, the consequent dryness of the atmosphere, and the remoteness of the province from the sea, combine to make the climate more extreme than in other parts of India. The summers are very hot and the winters cold, at night even frosty.

IRRIGATION.—The low rainfall and the absence of small streams have in the past rendered this fertile province unproductive except along the banks of the rivers. This has led to the construction of an elaborate system of canals, and to-day no country in the world is so well irrigated as the Punjab. The cost of construction of the canals has been enormous, but so beneficial are they that Government secures a good revenue as return on the outlay.

The canals are of two kinds—(1) perennial canals, which draw their waters from the rivers where they leave the mountains and enter the plains, and whose supply is therefore practically inexhaustible; and (2) inundation canals, which are cut direct from the main stream and are of service only when the river is in flood. The chief perennial canals are —

- (1) The *Jehlam Canal*, which irrigates the Jech Doab.
- (2) The *Chenab Canal*, which irrigates the Rechna Doab.
- (3) The *Barī Doab Canal*, which derives its waters from the Ravi.

- (4) The *Sirhind Canal*, fed by the waters of the Sutlej, and irrigating an extensive area to the east of that river.

- (5) The *Western Jumna Canal*, deriving its supply from the river Jumna, and irrigating a large part of the Eastern Punjab.

The inundation canals are chiefly constructed from the Lower Sutlej and Chenab and that part of the Indus immediately above its junction with the Panjnad.

Further schemes are in progress for watering those parts of the province not yet irrigated, especially the Sind Sagar Doab.

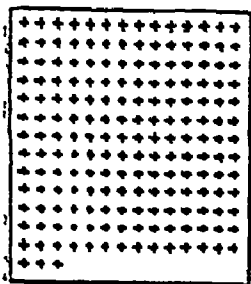
PRODUCTIONS —The chief cultivated crops are wheat and barley, especially the former, and the Punjab is fast becoming one of the great wheat-producing countries of the world. Both wheat and barley are cold-weather crops. The chief hot-weather crops are millets, cotton, tobacco, sugar-cane, and rice. Tea-making is an important industry in the Kangra Valley. Forests are preserved in the hills, and the chief timber is deodar (cedar).

Minerals are unimportant except salt, which is dug in large quantities in the Salt Range. A little coal is found in the valley of the Jehlam at Damdot. The mine is worked by the North-Western Railway.

COMMUNICATIONS —The Punjab shows clearly that railway expansion is an index to commercial progress. The North-Western Railway spreads over practically the whole province. The first line laid down was that connecting up Lahore and Peshawar with Delhi, and so with the rest of India. The development of Punjab trade and the rise of Karachi called for the construction of the line from Lahore to Karachi, which is now in process of being doubled to cope with the increased trade. The construction of the Punjab canals has led to the laying down of railways in each of the doabs, and to-day a map of the North-Western Railway bears a striking resemblance to the map of the Indus and its tributaries.

PEOPLE —The population of the province and native states was, in 1911, little short of 20 millions, of whom nearly one-half

FIG. 59 — AVERAGE
POPULATION OF A
SQUARE MILE OF
THE PUNJAB



were Muhammadans and just over 2 millions Sikhs. The average population is thus 185 to the square mile. The language of the educated classes is Urdu, but Punjabi is spoken by the great majority of the people.

OCCUPATIONS. — Agriculture is the employment of the bulk of the population. Manufactures are not yet developed to any extent, but indigenous industries are important. Gold and silver embroidery, jewellery, and ivory work are carried on at Delhi; cotton-weaving at Ludhiana; carpets at Amritsar; and pottery at Multan. Lahore, Amritsar, and Delhi are important commercial centres.

GOVERNMENT.—The Punjab has been under the control of a Lieutenant-Governor since 1859. He is assisted by a Legislative Council, and the province is divided for purposes of administration into five Commissionerships.

There are thirty-four native states, of which Bahawalpur and the Phulkian states of Patiala, Nabha, and Jind are the most important.

TOWNS.—Most of the large towns are connected with the North-Western Railway.

Delhi, on the Jumna, in the south-east of the province, is the new capital of India, and the most populous city in the Punjab (233,000). It is also a great commercial town and an important distributing centre, being about equally distant from the ports of Bombay, Calcutta, and Karachi. No fewer than six railways enter the city. Its industries are important, its art products being known all over the world. The present city is comparatively modern, but the ruins of many former Delhis may be traced in the neighbourhood. Delhi is a city of magnificent buildings, the most famous of which are the Jumma Masjid, the palaces in the Fort, and the tombs of emperors in the immediate vicinity. The Qutb Minar, 10 miles distant, was built in 1206, and is still in the most remarkable state of preservation.

Delhi formerly belonged to the United Provinces. It was transferred to the Punjab after the Mutiny of 1857.

Ambala (80,000) is an important military cantonment and the changing station for Simla, formerly the summer capital of India.

Ludhiana (50,000) is an important native city, with a growing cotton industry.

Amritsar (153,000) is next reached. This is the centre of Sikhism and the location of the Golden Temple. The town has important manufactures of carpets and an important market for manufactured cotton and other goods.

Lahore (228,000) is the capital, and stands near the Ravi, at the centre of the province. Commercially and industrially the city is growing rapidly, and it is also the seat of a University. The Fort is associated with the name of Ranjit Singh, the great Sikh ruler. From Lahore the railway runs north and south.

Multan (99,000) is the only Punjab town of importance on the southern line. It is a considerable trade centre.

Rawal Pindi is the chief town on the northern line. It is the most important military centre in Northern India. The population is 86,000.

Other large military stations are Attock, Jalandhar, and Ferozpur, the last mentioned with an arsenal.

The Punjab has several large hill-stations. The most important are Simla, referred to above; Kasauli, with its Pasteur Institute, also reached from Ambala; Dalhousie, from Amritsar and Pathankot, and Murree, from Rawal Pindi.

Some towns in the west of the province have risen on account of trans-frontier caravan trade: such are Kalabagh and Dera Ghazi Khan.

6.—THE NORTH-WEST FRONTIER PROVINCE

This province was created in the year 1901, when several frontier agencies extending from Chitral on the north to Waziristan on the south, which had previously been under military control, were united with the frontier districts of the Punjab and placed under civil administration.

BOUNDARIES AND AREA.—The province is long and narrow, it runs from north to south, and is irregular in shape. The Indus forms the boundary for a considerable distance on the west. The surrounding states are Kashmir, the Punjab, Baluchistan, and Afghanistan. The area is 13,500 sq. miles.

PHYSICAL FEATURES.—The province is very mountainous, with river valleys, through which flow tributaries of the Indus running from east to west.

The Hindu Kush Mountains in the north attain a height of nearly 16,000 ft. The chief streams here are the Gilgit and the Chitral.

West from Peshawar is the Safed Koh Range, as high as the Hindu Kush, with the Kabul River to the north and the Kuram to the south.

The Gomal River separates the North-West Frontier Province from Baluchistan.

CLIMATE AND PRODUCTIONS.—The climate is, in the

lower districts, similar to that of the Punjab. In the more mountainous parts it is much colder, especially in winter. The productions, too, are similar to those of the Punjab, but they are not yet commercially important. Fruits are widely grown and ripen well.

PEOPLE.—The inhabitants number 2,200,000, or an average of 129 to the square mile, of which all except about 200,000 are **Muhammadans**. Most of the people are **Pathans** and speak **Pushtu**. They are mostly engaged in agriculture.

TRADE.—The main line of the North-Western Railway runs from Attock on the Indus to Peshawar, but a branch of the same railway runs along the east bank of the Indus, and goods enter the Punjab by

FIG 60 — AVERAGE POPULATION OF A SQUARE MILE OF THE NORTH - WEST FRONTIER PROVINCE.

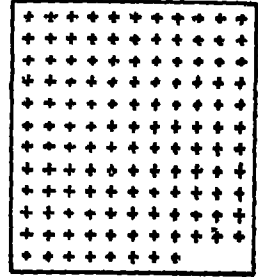
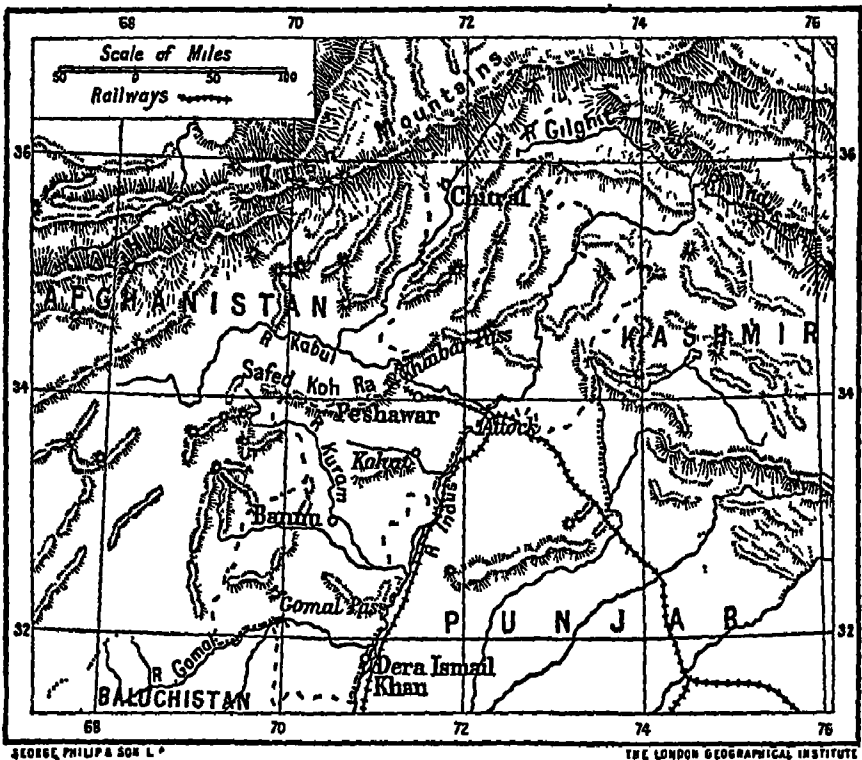


FIG 61 — MAP OF THE NORTH-WEST FRONTIER PROVINCE



Longmans, Green & Co. London, New York, Bombay & Calcutta.

crossing the river. There is considerable road trade along the river valleys into Afghanistan

GOVERNMENT.—The province is under a Chief Commissioner, and its affairs are now controlled by the Government of India direct, instead of through the Punjab Government, as was the case with all frontier matters before 1901

TOWNS.—Most of the towns are important as military outposts.

Peshawar (98,000), the headquarters of the Local Government, is a large military station, and commands the Kharbar Pass. It is the centre of considerable trade, and has manufactures of wax-cloth.

Dera Ismail Khan, on the Indus, is the destination of the trade through the Gomal Pass

The chief military outposts are Bannu, Kohat, and Chitral.

7.—BOMBAY PRESIDENCY

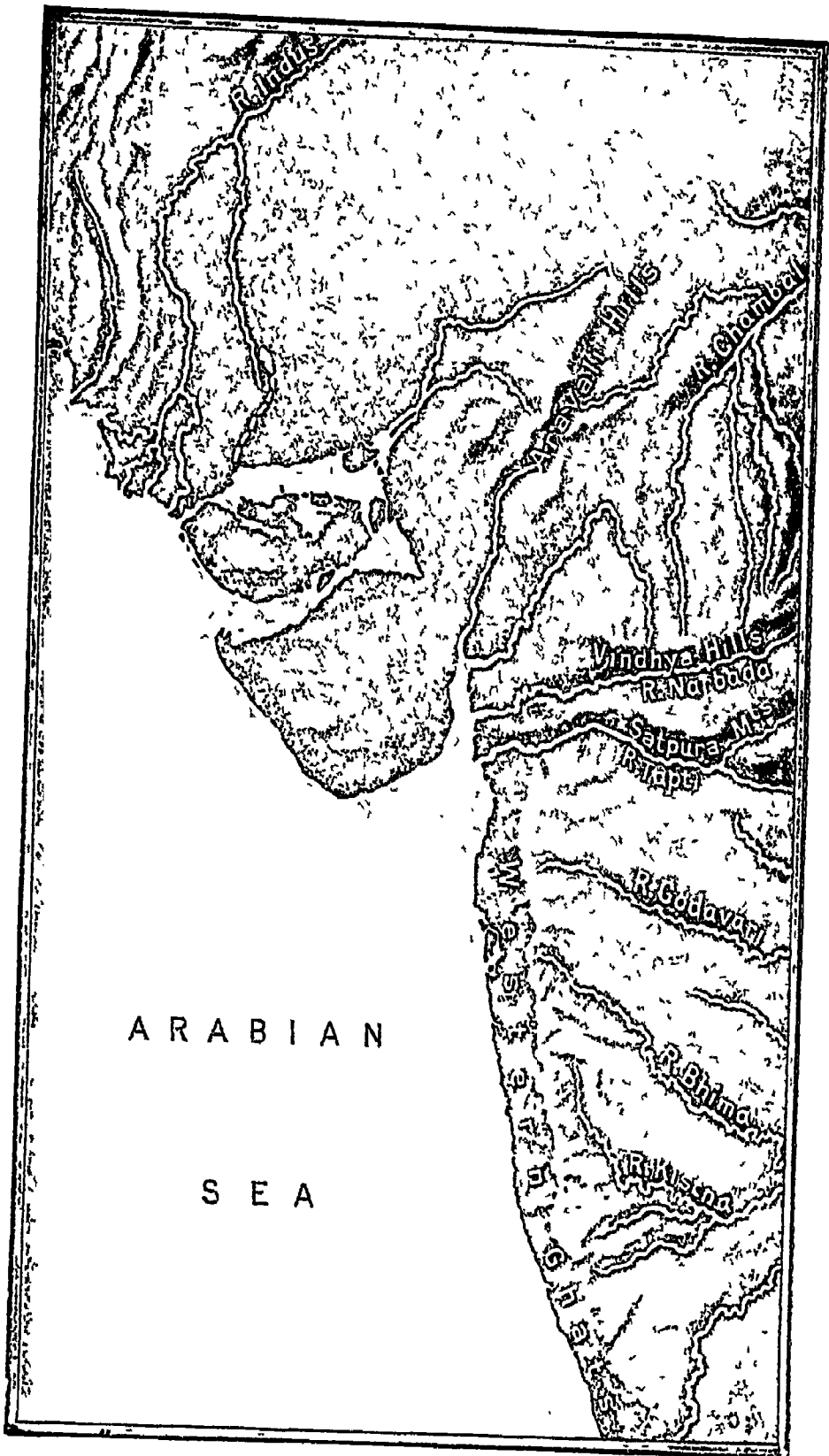
HISTORY.—The island of Bombay was the first Indian territory to come into the possession of the English Crown, having been given as part of her dowry to the Portuguese Princess Catharine on her marriage with Charles II. in 1661. Four years later the island was handed over to the East India Company, but it was at this time comparatively unimportant, Surat being at this period the centre of British enterprise on the west coast.

The Presidency came gradually under British power during the nineteenth century—a fresh portion of territory being acquired and added after each of the three Maratha wars. Sind was conquered in 1843, and although geographically distinct from the remainder of the Presidency, it was placed under the administration of Bombay.

Bombay has always gained considerable importance from its position. Being on the west of the peninsula it was early visited by Europeans, and Diu, Daman, and Goa are still in Portuguese possession—a remnant of a much larger dominion. The city of Bombay has a large number of Parsis (the descendants of Persian immigrants), famous for their trading ability.

BOUNDARIES AND EXTENT.—The Bombay Presidency is long and narrow, extending over a thousand miles from north

FIG. 61a —BOMBAY PRESIDENCY. RELIEF.



to south, and having an average breadth of less than 200 miles. The total area is 188,000 sq. miles, of which Sind occupies a quarter and native states nearly half the remainder

The sea bounds the Presidency on the west, but on the land side the only natural boundaries are a few small streams.

The provinces and states lying on the borders are—

Sind—Baluchistan (west), N W F. Province, Punjab, and Bahawalpur (north), Rajputana (east)

Lower Presidency.—On the east, commencing in the north, Central India, Central Provinces, Haidarabad and Mysore States, and Madras.

PHYSICAL FEATURES.—The Bombay Presidency is divided by the two great openings of the sea—the **Rann of Cutch** and the **Gulf of Cambay**—into three parts —

1. Sind, north of the Rann of Cutch. This part of the province consists of a sandy plain, undiversified over the whole area, except where the Indus travels, or where the presence of water has caused a town or village to spring up. The lower course of the Indus is remarkable for its want of tributaries, and in its lower course the Indus Valley may be compared with the valley of the Nile. The river does not, however, overflow its banks and fertilise Sind, as the Nile fertilises Egypt. Sind is outside the monsoon area.

2. The **Kathiawar Peninsula**, between the Rann of Cutch and the Gulf of Cambay. Portions of this peninsula are hilly, and there are many small streams. The southern portion gets much more rainfall than the northern, the Rann of Cutch becoming quite dry in places during the hot season.

3. The **Deccan** portion of the Presidency, south of the Gulf of Cambay. In the north are the ends of the **Vindhya** and **Satpura** Ranges and the lower courses of the **Tapti** and **Narbada**. From north to south run the **Western Ghats**. This range naturally divides the surface into three natural regions—the coast-strip; the mountain ridge, and the plateau strip east of the ridge. The whole of this portion of the province is well watered, many streams (those to the west being very short) rising in the Ghats. The largest streams are the upper courses of the **Godavari**, **Kistna**, and **Bhuma**. The chief passes in the Ghâts are near

Bombay, Thal Ghat and Bhore Ghat; both are railway routes, one north-east, the other south-east, from Bombay.

CLIMATE AND RAINFALL.—In the southern portion of the Presidency the proximity to the sea of the coast-strip and the elevation of the interior render the climate free from extremes, although, in the rains especially, it is uncomfortably humid near the coast. The rainfall is generally abundant—about 75 inches at Bombay—and is much higher on the west than on the east of the Ghats.

In Sind the climate is extreme. very hot in summer, and cool (even cold during the night) in winter. This is due very largely to the absence of moisture or any other equalising influence. The dry sand absorbs heat rapidly during the day-time, and radiates it as quickly during the night. The annual rainfall in Sind is only about 4 inches, monsoon rains being practically absent, owing to the absence of lateral mountain ranges to condense the moisture.

PRODUCTIONS —Vegetable.—Trees are everywhere important. In Sind the date palm is invaluable to the people, and the babul grows along the banks of the Indus. The trees of the Western Ghats and Deccan plateau have considerable commercial value, teak and sandalwood being the most valuable. The coco-nut palm is abundant along the coast.

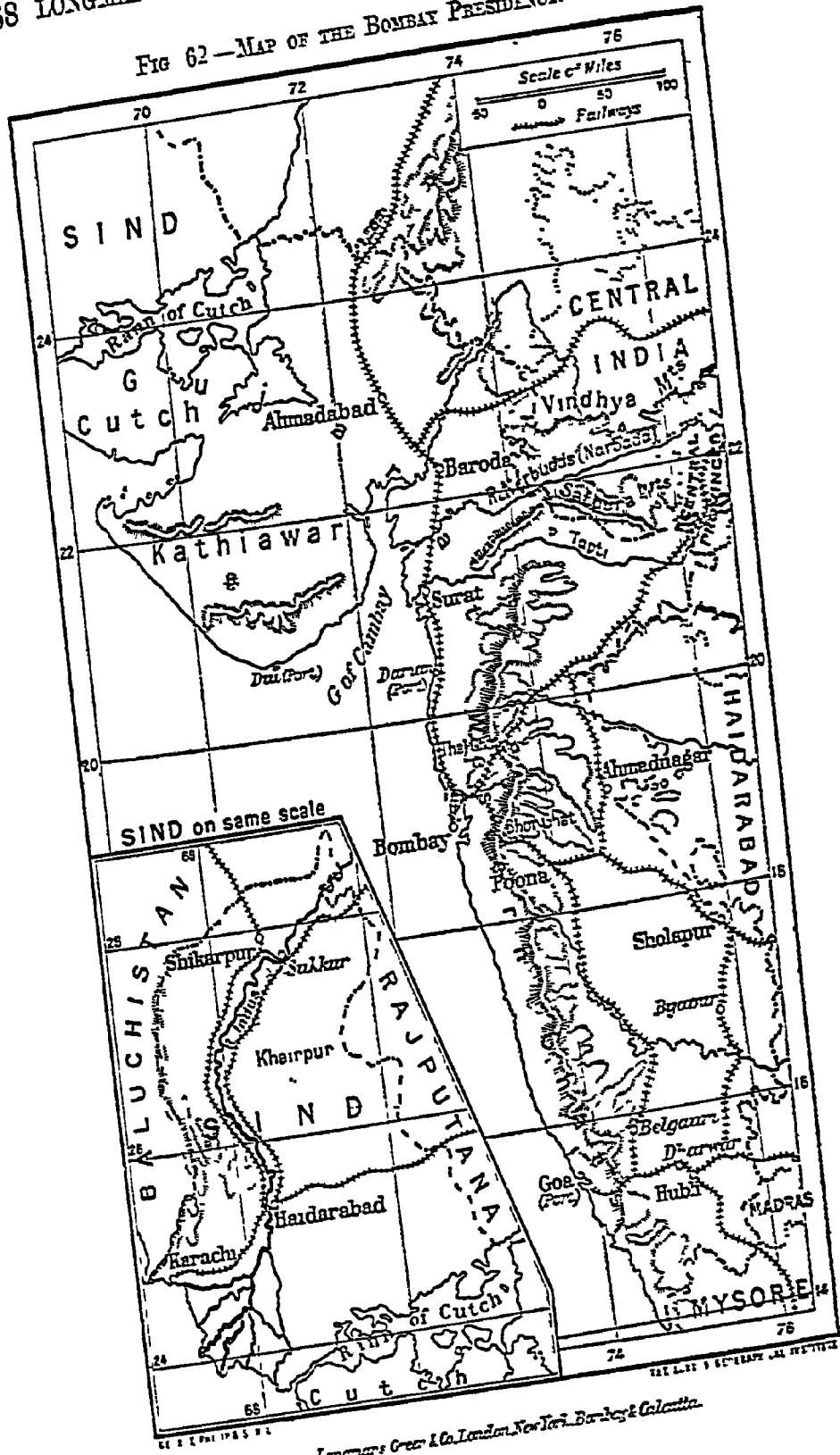
Of cultivated plants, wheat and barley are grown on irrigated lands in the winter in Sind, millets being the crop in the summer. Along the wet coast strip, rice is the most important cereal, and this grain is also grown on the tableland. But the chief crops of the Bombay Deccan are wheat in the north and cotton in the south, the famous 'black soil' suiting this latter crop to perfection.

Animal.—Gujarat is the only part of India where the lion is found.

MINERAL.—Gold is mined in the neighbourhood of Dharwar, but the minerals of the Presidency are unimportant.

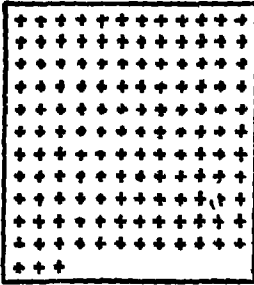
PEOPLE —The total population of the Presidency is 19½ millions, an average of 160 per square mile, but of these only about 3,500,000 are in Sind, so that the density of the remainder of the province is 212 per square mile. Four-fifths of the people are Hindus. Bombay city contains half the Parsis in India. The

FIG 62—MAP OF THE BOMBAY PRESIDENCY.



languages chiefly spoken are Marathi and Gujarati in the peninsular part of the Presidency, and Sindhi in Sind.

FIG 63 — AVERAGE
POPULATION OF A
SQUARE MILE OF
THE BOMBAY PRE-
SIDENCY



OCCUPATIONS.—As in the rest of India, agriculture is the most important industry. (For cultivated crops see above.)

The manufacture of cotton goods is becoming every year more considerable, many mills having been erected at Bombay, Ahmadabad, and other towns, for weaving the cotton of the province. The chief indigenous industries are those of silk-weaving, embroidery, and paper-making.

TRADE.—The Bombay Presidency is served by four systems of railways. Commencing in the north, the North-Western Railway follows the course of the Indus through Sind (for some distance on both sides of the river), with a branch line into Baluchistan.

The northern portion of the Lower Presidency is served by the Bombay, Baroda, and Central India Railway, which runs along the coast northwards from Bombay, *via* Surat to Baroda, and thence to Delhi. The central part has the two lines of the Great Indian Peninsula Railway, one north-east to Jubbulpore, the other south-east *via* Poona to Raichur. The south of the Presidency has the Southern Mahratta Railway in two almost parallel lines, the one from Poona into Mysore State and the other from Hotgi into the Madras Presidency.

These railways give an impetus to the trade of the province, distributing the imports of Bombay and Karachi, and facilitating the transport of Indian produce for export. Bombay and Karachi stand second and third among Indian ports in the total of goods dealt with, while Bombay stands first in the export of cotton and seeds, and Karachi of wheat.

GOVERNMENT.—The Bombay Presidency is under the rule of a Governor, who, like the Viceroy and the Governor of Madras, is appointed for a period of five years by the King-Emperor. He is assisted in the administration by an Executive and a Legislative Council. The province has five divisions.

The number of native states is very large—about three hundred and sixty—but many of them are very small in area.

The most important is **Baroda**, which is under the Gaekwar. Other large states are **Cutch**, and **Khairpur** in Sind

Aden, at the south-east of Arabia, is administered by the Governor of Bombay.

TOWNS.—All the important towns are connected with the railways.

Bombay has the best harbour on the west coast of India, the coast nearest to Europe, and this fact accounts for its growth and its present importance. As a port it stands second in India, both imports and exports being greater than those of any other port except Calcutta. It is important also as being the port at which the European mail leaves and enters India. The raw cotton produced in the Bombay Presidency accounts for the remarkable progress made in manufacture of late years

The city itself is built upon an island, but traffic is carried across the shallow strait which separates it from the mainland, and both the railway lines out of Bombay are in direct connection with the rest of the Presidency. Bombay is the second city of India in point of population, with about 980,000 inhabitants. A few years ago it stood first; but it has suffered severely from the ravages of plague in recent years, and its population actually decreased during the decade 1891–1901. The city is remarkable for its fine public buildings, and the caves on Elephanta Island in the harbour are much visited by sightseers.

Leaving Bombay by the **Bombay, Baroda and Central India Railway**, the first city of importance reached is **Surat** (115,000), a few miles from the sea on the mouth of the Tapti, famous as being the first British settlement in India. The transfer of trade to Bombay has led to the decline of Surat, which is a river port and has no harbour.

Baroda is the capital of the native state of that name, and has a population of 99,000. It is commercially unimportant.

Ahmadabad (216,000) is the second town in the Bombay Presidency. It was formerly a city of much political importance, and the capital of Gujarat. It is now rising into prominence as a trading and cotton-manufacturing centre.

The **Great Indian Peninsula Railway** runs north-east through the Thal Ghat, and south-east through Bhor Ghat.

Poona (159,000) is the first important town on the latter line. This hill-station is less than 2,000 ft. above sea-level, and is the summer seat of the Bombay Government. It is famous as being the former capital of the Marathas. The only other important towns on this line are Ahmadnagar and Bijapur, former capitals of Muhammadan kingdoms.

On the south Mahratta lines are Belgaum, a military station, and Dharwar, Hubli, and Sholapur, important centres of a large cotton-growing area

TOWNS IN SIND.—The chief towns of Sind rose on or near the River Indus, and are now connected by the North-Western Railway, which runs near the river.

Sukkur stands at the point where the railway crosses the Indus by a fine suspension bridge

Shikarpur, on the branch line through the Bolan Pass, is the destination of much of the trade coming by that route into India.

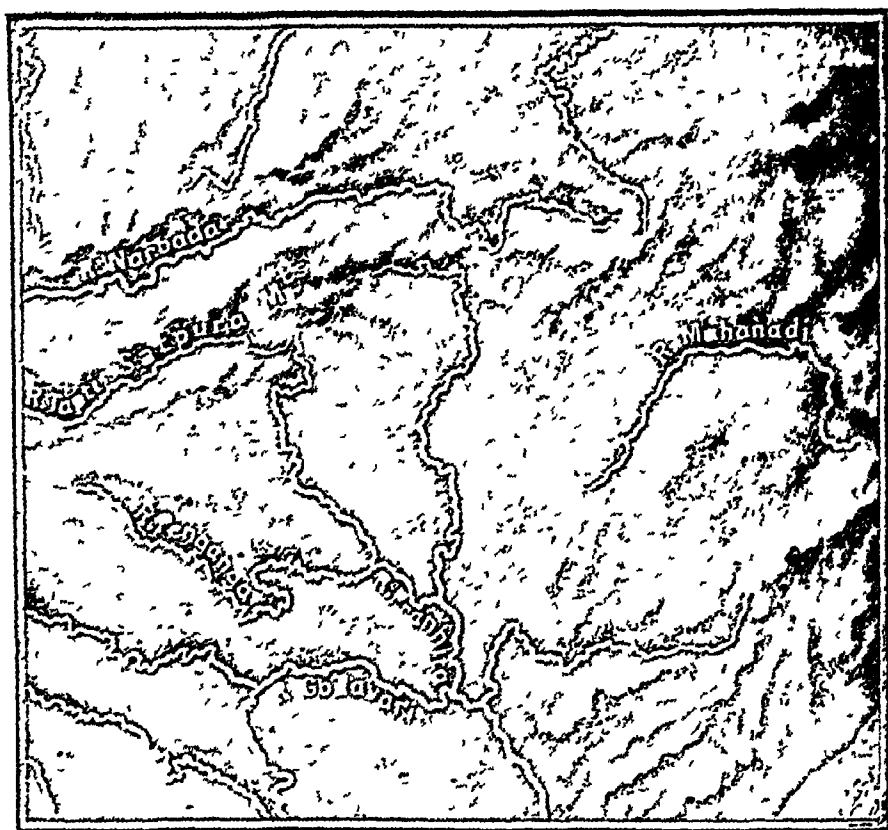
Haidarabad was the former capital of Sind, and has a population of about 60,000. A branch of the railway runs from this town to Umarkot, well known in history as the birthplace of the Emperor Akbar.

Karachi (152,000) is a rapidly growing port, and the headquarters of the Commissioner of Sind. The wheat and seed trade of the Punjab has developed to such an extent during the past few years as to make Karachi of great commercial importance. The harbour is protected by a breakwater.

8. CENTRAL PROVINCES AND BERAR

HISTORY.—These provinces, formerly native states under British protection, were raised into a Chief Commissionership in 1861. Berar was at that time under the direct control of the Government of India, having been assigned to the British by the

FIG 63a —CENTRAL PROVINCES AND BEPAR RELIEF

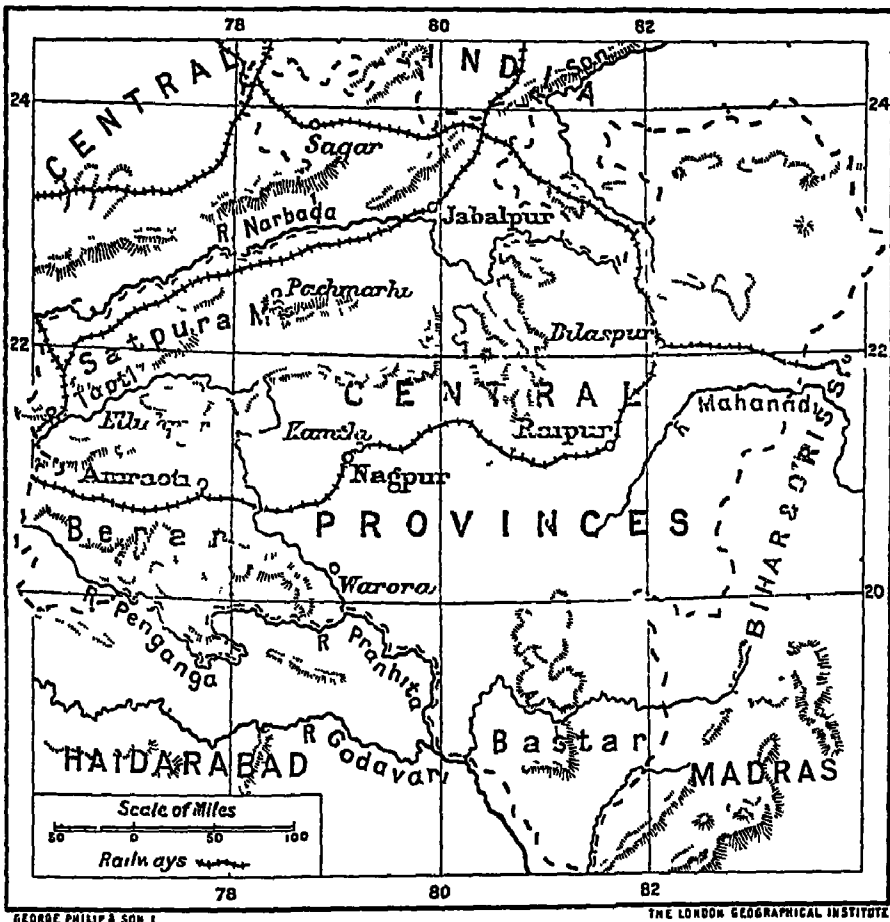


Nizam of Haiderabad in return for the upkeep in his state of a military force. In 1902, by a treaty with the Nizam, the 'assigned districts' were made over finally to the British, and Berar became, for purposes of control, a part of the Central Provinces. The boundary on the north-east was slightly altered in 1905, when the Hindi-speaking districts of Chota Nagpur

were included in these provinces, and the Uriya-speaking districts of the Central Provinces were made over to Bengal.

BOUNDARIES AND AREA.—The provinces have a very irregular outline, most nearly resembling a quadrilateral, the four sides of which are bounded by—(1) N W, Central India; (2) N.E., Central India and Bengal; (3) S E, Bengal and Madras; (4) S.W, Haadarabad. The Bombay Presidency touches Berar.

FIG 64.—MAP OF THE CENTRAL PROVINCES AND BERAR



Longmans, Green & Co, London, New York, Bombay & Calcutta.

The total area is about 130,000 sq. miles. (Compare with the Punjab)

RELIEF.—The Vindhya Mountains and Central India Highlands extend across the north, while the flat plateau of the Deccan occupies the south

RIVERS—The Narbada forms the boundary for a considerable distance on the north-west, and the Godavari and its

tributaries the Pranhita and Penganga on the south-west. The Mahanadi, Tapti, and the Son, a tributary of the Ganges, all rise in these provinces

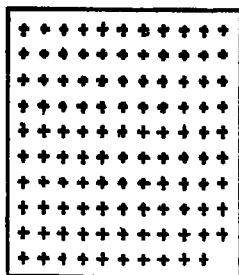
CLIMATE AND RAINFALL.—The greater part of the region is remote from the sea, but the elevation moderates a climate which would otherwise be much warmer. The rainfall is everywhere good.

PRODUCTIONS—The soil is very fertile, and cotton, the characteristic crop of the Deccan provinces, is most largely cultivated, especially in Berar. Other crops are rice, millet, oil-seeds, and a considerable quantity of wheat. A large area is still covered with forests and jungle, from the former good timber, including teak, is obtained, and in the latter lac and silk-cocoons are collected

Coal is obtained at Warora, south of Nagpur.

PEOPLE.—The population, a little over 14 millions, or 109 to the square mile, is comparatively small, but a large part of

FIG 65—AVERAGE
POPULATION OF A
SQUARE MILE OF
CENTRAL PROVINCES
AND BERAR



the provinces is not yet cleared of jungle, and is only inhabited by wild tribes. A quarter of the population consists of aborigines—Gonds and Bhils chiefly. There are 11½ millions of Hindus, and the chief languages are Hindi in the north and Marathi in the south and west

RAILWAYS.—These are confined to the northern portion of the provinces. (1) The Bengal-Nagpur Railway runs to Nagpur, where it joins a branch of (2) the Great Indian Peninsula Railway, which traverses Berar. (3) From Bilaspur a branch goes north-west to the East Indian Railway, which runs just inside the north-west boundary, as far as Jabalpur, where it meets the Great Indian Peninsula line.

TOWNS.—Nagpur (101,000), the seat of Government, is an ancient city and an important commercial centre. Pachmari, about 100 miles to the north and situated in the Satpuras, is the summer capital.

Jabalpur, in the northern angle of the provinces, has a population of 100,000. It is an important railway centre, and is famous for its marble rocks.

Kamthi, near Nagpur, and **Sagar**, north of Jabalpur, are important military stations.

Raipur is the largest town in the east, and is a trade centre.

The largest towns in Berar are **Amraoti** (40,000), the cotton market, and **Ellichpur**, a military cantonment.

NATIVE STATES.—There are fifteen native states under the control of the Central Provinces Government. The largest is **Bastar** (13,000 sq. miles), a wild region with a population of only 300,000.

9. THE MADRAS PRESIDENCY

HISTORY.—Fort St. George in the city of Madras, was one of the earliest pieces of territory acquired by the British in India, having come into their possession in 1639. As the Bombay Presidency came into the hands of the British as the result of the Maratha wars, so a considerable portion of the Madras Presidency came into the Empire after the Mysore wars.

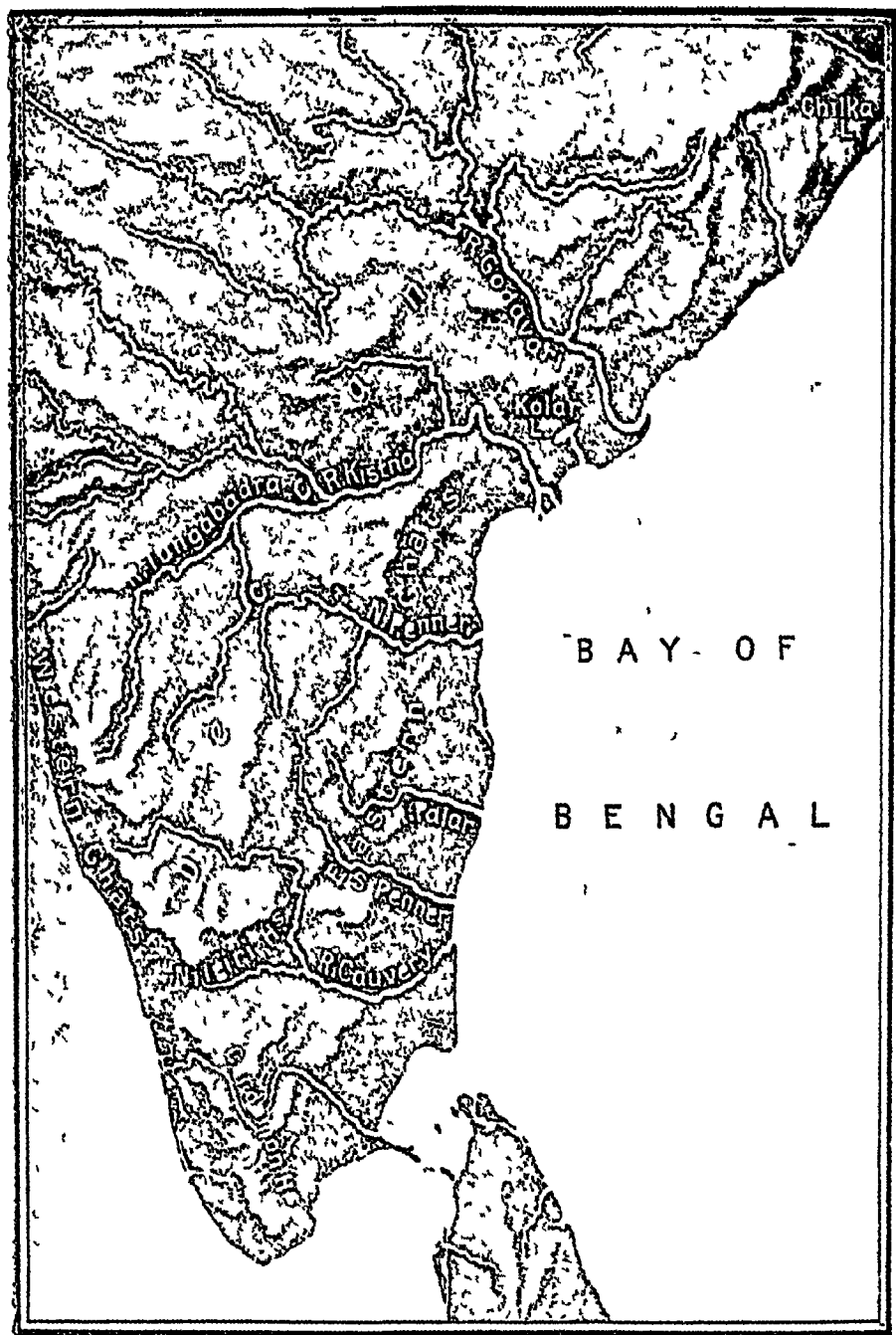
BOUNDARIES AND AREA.—With the exception of the Northern Circars, the coast-strip between the mouth of the Kistna and Chilka Lake, the whole of the Madras Presidency lies to the south of the River Kistna and its tributary, the Tungabhadra. Madras has thus natural boundaries on three sides. The State of Mysore, although lying within the limits of the Presidency, is administered by the Government of India.

The area is just over 150,000 sq. miles.

PHYSICAL FEATURES.—A coast-strip extends down both sides of the Presidency, that on the east or **Coromandel Coast** being much broader than that on the west or **Malabar Coast**. As stated above, the eastern strip, north of the Kistna, is known as the **Northern Circars**, the southern part is the **Carnatic**.

The **Eastern and Western Ghats** lie behind these coast-strips, the former broken and permitting the passage of several important rivers, the latter continuous and draining by short streams to the Arabian Sea. South of Mysore State the **Nilgiri Hills** culminate in **Mt. Dodabetta**, 8,750 ft. high. The **Anamalai Hills**, further south, are still higher. Between these two groups the **Palghat Gap** furnishes communication at an elevation of only 1,000 ft between the two coasts. The **Cardamom Hills** occupy the extreme south of the peninsula.

FIG 65a.—THE MADRAS PRESIDENCY. RELIEF.



The interior of the province forms a part of the Deccan tableland.

The rivers of Madras are important, with long courses on the plateau, and shorter courses on the coast-plain, to which they descend through deeply cut gorges. The chief are the lower courses of the Godaverī and Kistna, the North Penner, the Palar, the South Penner, and the Cauvery (Kaverī). The largest of these rivers flow into the sea by extensive deltas.

Much of the Coromandel Coast is fringed with lagoons, the largest being Pulicat Lake, just north of Madras. Kolar Lake lies near the coast north of the mouth of the Kistna.

CLIMATE AND RAINFALL.—No part of the Presidency is far from the sea, so the climate is free from extremes. On the coast-plain it is hot and humid, while on the tableland it is more moderate all the year round.

The rainfall is generally sufficient all round the coast. On the west, where the summer monsoon blows, it is abundant, on the east coast, which depends more on the winter monsoon, it is not so heavy. The Ghats deprive the rain-bearing winds of much of their moisture, and parts of the tableland occasionally suffer from drought in consequence.

IRRIGATION.—The irrigation works of the Madras Presidency are therefore very important. The most common form of water storage is by means of tanks, with which the Presidency is literally covered, but there are very important canals also. The chief of these are connected with the Godaverī, the Kistna, and the Cauvery, and the areas irrigated are in the deltas of these rivers. The head of water is obtained by an 'anicut' or dam built across the river where it enters the coastal plain, that across the Godaverī being $2\frac{1}{2}$ miles in length. These dams arrest the water and permit of its distribution over districts that are thus rendered among the most fertile in India. Important schemes for irrigating other parts of the Presidency are in course of development.

PRODUCTS.—The timber trees of the Western Ghats are valuable, the chief being teak, sandalwood, and ebony. Of cultivated plants, tea, coffee, and cinchona are grown on the lower slopes of the hills, and spices in the extreme south of the peninsula. The chief field-crops are rice, cotton, millets, sugar-

cane, and tobacco. A little indigo is also grown. The most fertile districts are the deltas of the rivers, which can be easily irrigated.

The minerals are important. The most productive iron mines in India are situated in the Salem district, but the absence of coal and limestone in the vicinity renders its working on a large scale impossible. Manganese ore is being raised in increasing quantities at Vizagapatam.

The mineral wealth of the Eastern Ghats is considerable. Plumbago is found and worked, and this mineral is also obtained in Travancore.

Salt is produced by the evaporation of sea-water in the lagoons.

PEOPLE—Madras is one of the most thickly peopled provinces of India. The total population is 41,400,000—that is, 279 to the square mile. The states of Travancore and Cochin are, owing to their fertility, very densely populated, the former supporting 416, and the latter 596 people to the square mile.

Nine-tenths of the people are Hindus, and of the remainder one-third are Christians.

The languages spoken are Dravidian—chiefly Tamil, Telugu, and Malayalam.

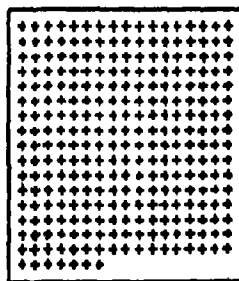
OCCUPATIONS.—Agriculture employs the great majority of the people, but the preparation of the raw products of the province—cotton, oil, indigo, and sugar—is increasing. A very flourishing tobacco and cigar industry is carried on in the neighbourhood of Trichinopoly. There is a little mining, and round the coasts the villagers engage in fishing.

TRADE.—The province is well supplied with railways, which radiate from Madras. The three main lines are the South Mahratta, the Madras, and the South Indian Railways.

For sea traffic the Madras Presidency is not so well supplied, for there is not a really good harbour in 1,700 miles of coast-line. The coasting trade is nevertheless considerable, the chief ports engaged being Vizagapatam, Cocanada, Pondicherry, Cuddalore, Tuticorin, Quilon, Cochin, Calicut, and Mangalore.

Madras is the only seaport which affords harbourage to large

FIG 66 — AVERAGE
POPULATION OF A
SQUARE MILE OF THE
MADRAS PRESIDENCY



ocean-going steamers, and its harbour is maintained at enormous expense. It is the only one of India's five large ports which is not the terminus of ocean passenger services. The chief exports are rice, cotton, and oil-seeds, and the imports manufactured articles.

With dredging, the harbour of Vizagapatam would be the safest and most commodious on the east coast. Proposals for its development have been made.

GOVERNMENT—The Governor of Madras is appointed in England for a term of five years, and, as in Bombay, there are two Councils. The province is divided into districts for purposes of administration.

There are two very important native states, Travancore and Cochin, and three smaller ones, Pudukotah, Banganapalli, and Sundur.

Travancore (area, 7,129 sq miles; population, 3,430,000) lies at the extreme south-west of the peninsula. The full effect of the monsoon is felt here, and the state is consequently well-watered and fertile. On the coast, rice is cultivated, and on the hills of the interior, teak and spices are important products.

Trivandrum (64,000) is the capital, and Quilon and Alleppi the chief ports.

Cochin (area, 1,362 sq miles, population, 918,000) lies to the north of Travancore, and is similar to it in physical structure, climate, and productions. Cochin is the most densely peopled state in India (596 to a square mile).

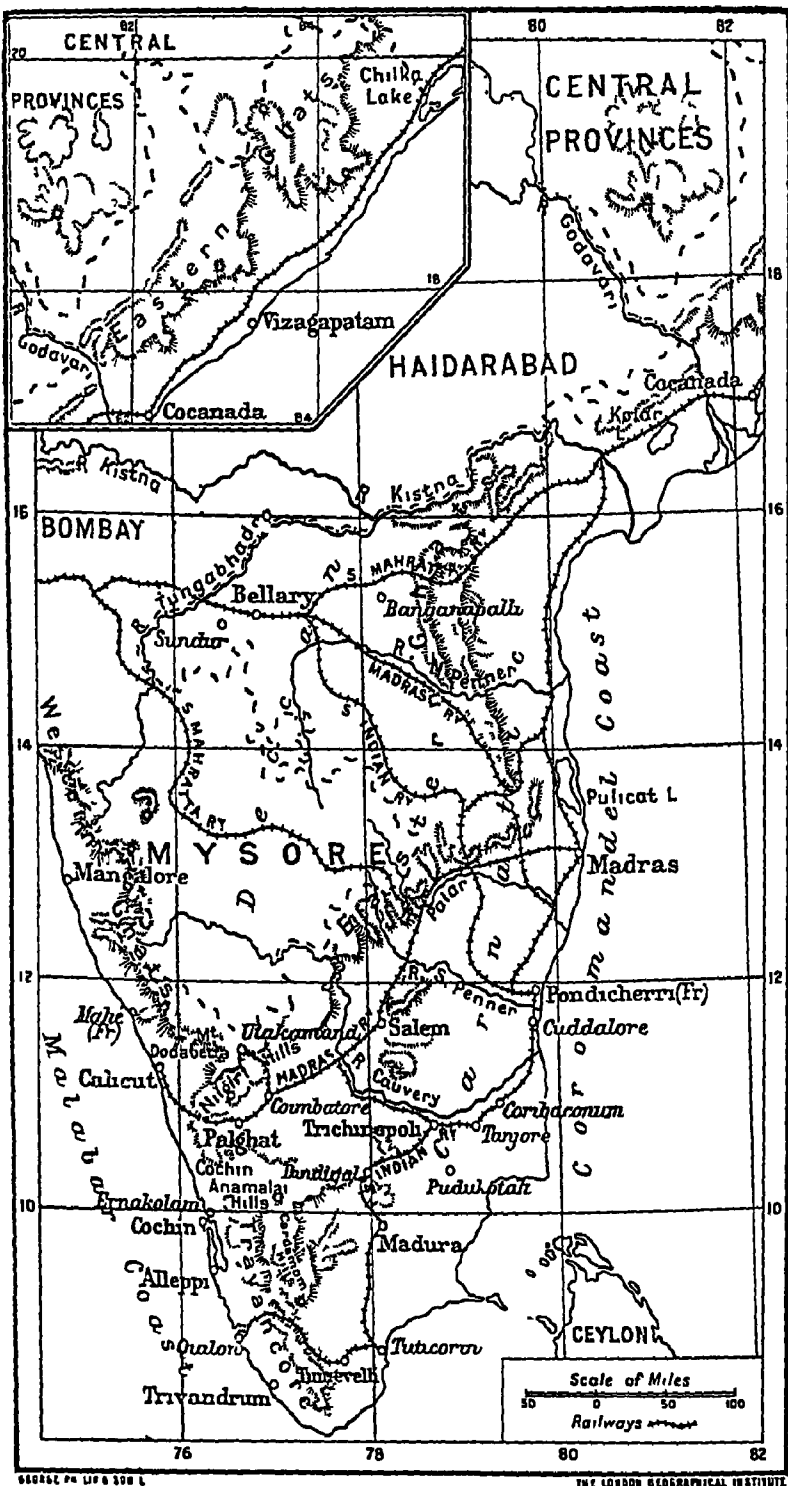
Ernakolam (22,000) is the capital, and Cochin the chief port.

The Laccadive Islands, on the 12th parallel and 200 miles from the west coast, are under the Madras Government.

TOWNS.—The Madras Presidency has a larger number of towns than any other division of India, there being no fewer than 48 with a population of over 20,000. Several important towns lie round the coast (see under 'Trade' above). The majority of the inland towns are in the south of the Presidency, and are connected by the South Indian Railway.

Madras (518,000) is the third city in India in point of population, and the fifth seaport in point of foreign trade. It owes its importance less to its trade and commerce than any other city in the Empire. The unsatisfactory nature of the

FIG 67—MAP OF THE MADRAS PRESIDENCY



Longmans, Green & Co., London, New York, Bombay & Calcutta.

harbour accounts for this in a large measure, as does also the fact that it is not so conveniently situated for distribution over a wide area, and to a large population, as the more flourishing ports, moreover, the great number of small ports in the Presidency produces competition, which is not so keen elsewhere. A considerable part of the Madras Presidency is fed with foreign goods from the more favourably situated port of Bombay. The meridian of Madras passes very nearly through the centre of the Empire, and 'standard time' for the whole of India is calculated at its observatory. The city is the seat of a flourishing University.

The **South Indian Railway** main line runs through Cuddalore, Combaconum, Tanjore, Trichinopoly, Dindigul, and Madura to Tuticorin. Pondicherry, Tinnevely, and Quilon are on branch lines.

Cuddalore, Pondicherry, Quilon, and Tuticorin are coasting ports. Tuticorin is the terminus of the railway.

Combaconum, Tanjore, and Madura are places much venerated by Hindus. Madura (134,000) is the religious capital of South India, corresponding to Benares in the north. It is noted for its temples.

Trichinopoly (122,000) and **Dindigul** are centres of the cigar-making industry.

The **South Mahratta Railway** runs into the north-west of the Presidency. The only important town passed is **Bellary**, a fortress and military station.

The **Madras Railway** has three sections. The south-western section passes Salem, Coimbatore, and Calicut.

Salem (59,000) stands in the iron district; the absence of coal and limestone prevents the profitable working of the metal on a large scale.

Coimbatore is situated at the entrance to the Palghat Gap.

Calicut is on the west coast, and was visited by Vasco de Gama in 1498. It gave its name to the fabric 'calico.'

By the north-eastern section of the Madras Railway, communication is established between Madras and the coast ports of Cocanada and Vizagapatam, and with the Bengal-Nagpur Railway, which runs as far as Waltair.

The most important hill-station is Ootacamund, which stands

at an elevation of 7,000 in the Nilgiri Hills. It is the summer seat of Government.

10. BURMA

HISTORY.—Burma, like the Bombay and Madras Presidencies, has come under British rule as the result of three successive wars. The two coast-strips of Arakan and Tenasserim were taken after the first Burmese war, the remainder of Lower Burma after the second, and Upper Burma after the third Burmese war in 1886. For several years the province was administered by a Chief Commissioner, but it was raised to the status of a Lieutenant-Governorship in 1897.

BOUNDARIES AND AREA.—On the west, Burma is bounded by the new province of Eastern Bengal and Assam, and by the Bay of Bengal. On the remaining sides it is bordered by foreign territory—China, French Indo-China, and Siam.

In extent it is the largest province, having an area of a little under 240,000 sq miles, about equal to the whole of Bengal, Bihar and Orissa, and Assam put together.

(For 'Relief,' 'Drainage,' 'Rainfall and Climate,' 'Productions,' and 'People,' see pages 117-120.)

POPULATION.—The population in 1911 was about 12 millions. This number included nearly 9½ million **Buddhists**. The people belong almost entirely to the **Tibeto-Burman** race, those of the interior consisting of wild uncivilised tribes.

OCCUPATIONS.—The industries are connected almost entirely with the natural products of the province.

1. **Agriculture.**—This is the occupation of the vast majority. **Rice** is the great crop, and there are a number of mills for husking it. **Tobacco** is grown and made into cigars.

2. **Connected with Forests**—**Timber** (especially **teak**) is felled, floated down the rivers, and sawn in mills. The **Burmese** excel in **wood-carving**. **Silk** is collected in the forest, and the **silk-weaving** industry is important.

FIG 68 — AVERAGE
POPULATION OF A
SQUARE MILE OF
BURMA

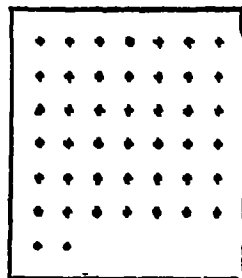
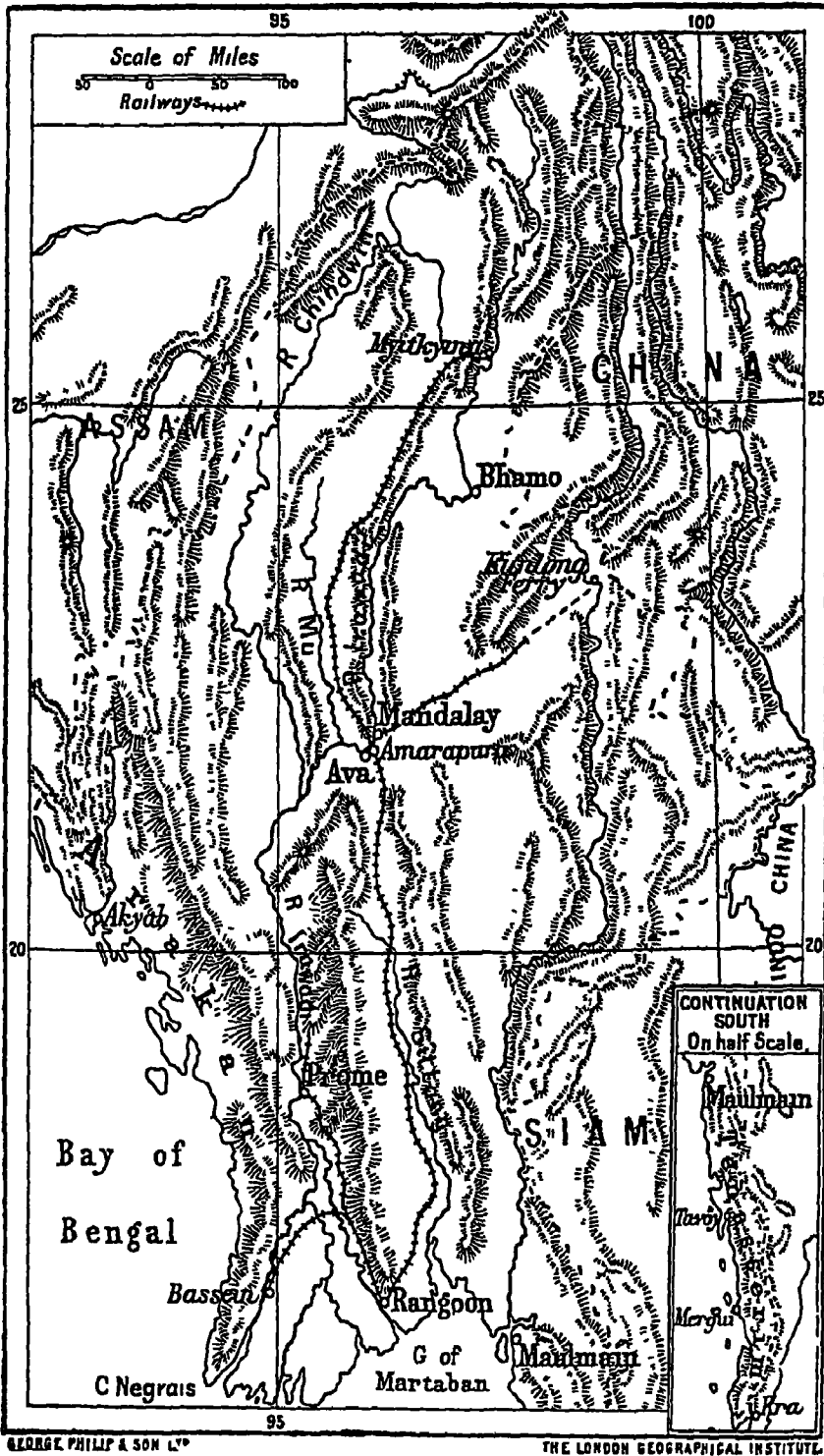


FIG 69 — MAP OF BURMA : POLITICAL



Longmans, Green & Co., London, New York, Bombay & Calcutta.

3 Mining—Petroleum is pumped from the oil-wells of Upper Burma; other minerals, of less commercial importance to Burma, are coal, iron, and tin. Burma is famous for its rubies, found on the hills near the Irawadi above Mandalay.

COMMUNICATIONS.—1. **Rivers**—The Irawadi and its tributary the Chindwin are very important as highways. A regular service of steamers goes up and down the river between Bhamo and Rangoon, and through the various channels at the mouth

2 **Railways.**—The longest and most important line runs from Rangoon to Mandalay along the Sittang Valley, and thence for 350 miles along the Mu Valley towards the frontier. Other lines travel along the Irawadi to Prome, and across the delta to Bassein

TRADE.—Lake India, Burma has good coasting ports, and considerable trade goes on between these and the Indian ports, especially Calcutta. The chief of these are Akyab, Moulmein, Tavoy, and Mergui.

Rangoon is the centre of the foreign trade, and is a port of call for several important lines of steamers. It stands fourth in foreign trade among the ports of the Indian Empire. It was formerly third, but has now been passed by Karachi.

The chief exports are rice, mineral oil, and teak, and other products of the country on a much smaller scale. The leading imports are manufactured goods, metals, and silk (raw and manufactured).

TOWNS.—Rangoon (298,000) is a remarkable example of the rise of a port with the commercial development of a country, the population and trade having increased tenfold during the past fifty years. The city is well laid out, and is situated about 20 miles from the sea, on the mouth of the Rangoon River. Less than half the inhabitants are Burmese, the remainder being Chinese and people from Madras and Bengal.

Mandalay (138,000), the former capital of Upper Burma, is an important centre of river and railway traffic. The ancient capitals of Ava and Amarapura are near by

Bassein, on a river of the same name, although nearly 80 miles from the sea, is accessible by large steamers, and it is the great rice market of Burma.

Akyab also exports rice; Moulmein has most of the timber trade; Tavoy and Mergui export edible birds' nests to China.

EXAMINATION PAPERS

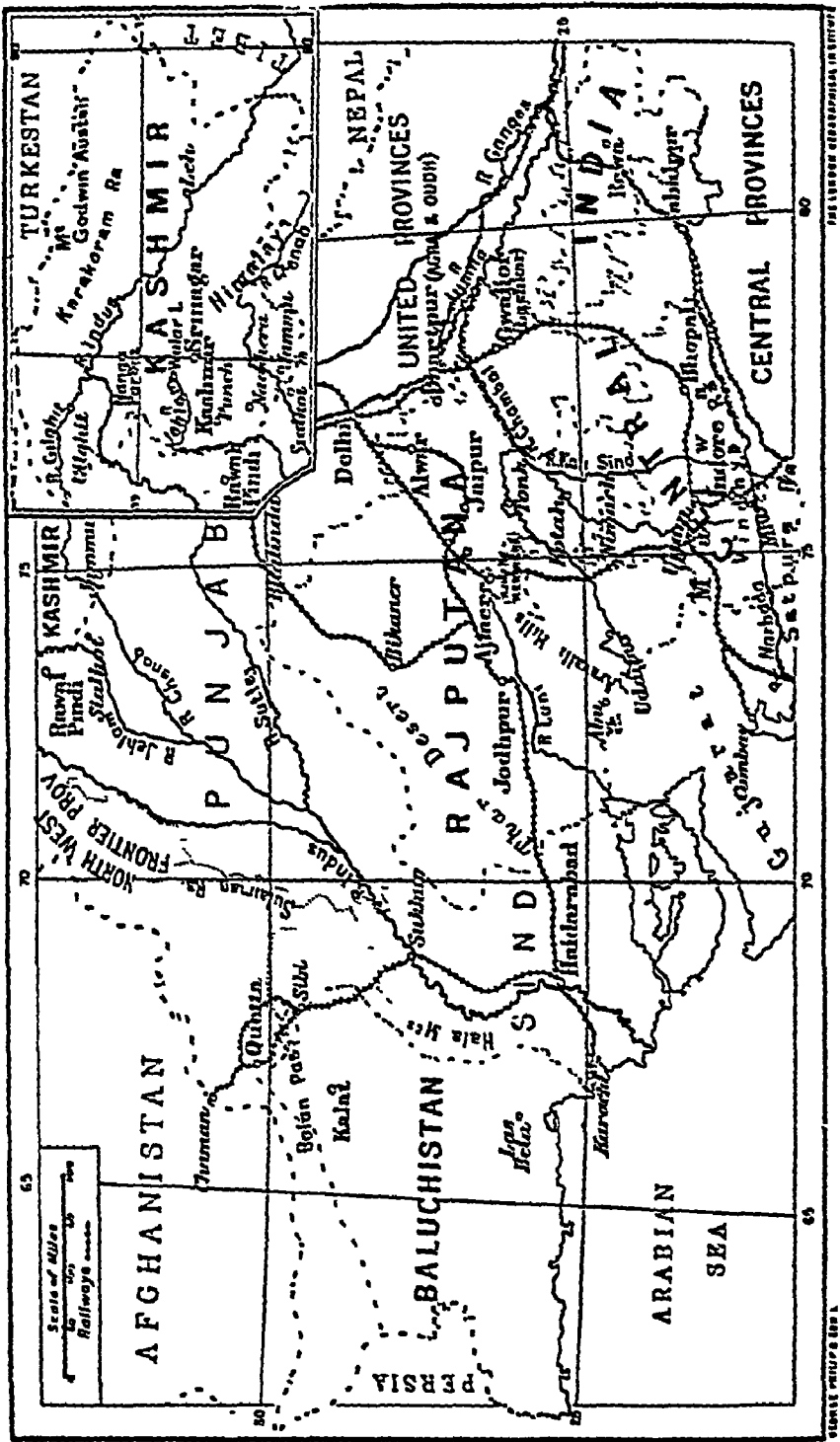
- A 1 Which parts of India are most densely populated? Account for the density in each case
2 What are the chief occupations of the people of Bengal?
3 What is the extent of the Bombay Presidency, and what are its chief physical divisions?
4 Describe the canal system of the Punjab
- B 1 Account for the rise, in their particular localities, of Allahabad, Bombay, Delhi, Karachi, Peshawar
2 Describe the physical features of the North-West Frontier Province
3 Give a short account of the river system of Burma
4 Which of the provinces of India have natural boundaries? Illustrate by a map
- C 1 What are the chief articles of trade dealt with at Calcutta, Rangoon, Bombay, Karachi? Account for their preponderance at these ports
2 Describe a railway journey from Bombay to Madras
3 What are the chief differences in climate and rainfall between Upper and Lower Burma? How do you account for them?
4 Write a short account of each of the following —Palghat Gap, Sukkur, Shikarpur, Goa, Jabalpur, Hardwar
- D 1 Describe the trade and trade-routes across the north-west frontier of India
2 Give a short account of the river system of the Central Provinces
3 Compare the Madras and Bombay Presidencies as to shape, size, configuration, population, and products
4 Give in order, commencing at Karachi, the chief coasting ports of India
-

PROTECTED STATES.—1. KASHMIR

GENERAL DESCRIPTION.—Kashmir is the second in size of the Indian native states, but owing to the mountainous nature of the country the population is small. The scenery, climate, and sport attract large numbers of tourists and holiday makers, especially to the beautiful valleys of the south-west. The best known part of the country is the Valley of Kashmir, drained by the River Jehlam.

The state has been tributary to the British since the close of the first Sikh war in 1846.

FIG 70 —MAP SHOWING PROTECTED STATES: NORTHERN INDIA.



BOUNDARIES AND AREA — Kashmir is roughly four-sided in shape, and has an area of 80,900 sq. miles. It is bounded on

the west and south by Indian territory—the North-West Frontier Province and the Punjab, on the east and north by Chinese territory—Turkestan and Tibet.

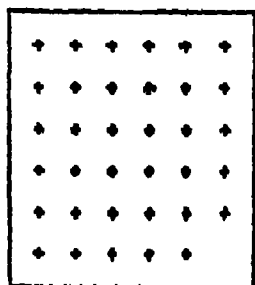
PHYSICAL FEATURES.—Kashmir is a land of lofty mountains and valleys. Three main ranges cross the state from north-west to south-east. The most northern of these, and loftier than the neighbouring Himalayas, is the **Karakorum Range**. Its highest peak, **Mount Godwin Austen** (28,250 ft.), is the second highest in the world. South of the Karakorum Mountains are the two parallel ranges of the **Himalayas**. **Nanga Parbat**, the highest peak of the inner range, is 26,600 ft high. The perpetual snows and the glaciers of these lofty ranges feed innumerable streams which either join the Indus and its tributaries or, as in the north-east, drain into lakes.

The River Indus flows north-west, diagonally across the state. At the point where its course bends southward it is joined by the Gilgit from the west. The Jehlam and Chenab drain the south-west area. **Wulur Lake**, below Srinagar, is an expansion of the former river, and is the largest fresh-water lake in India.

CLIMATE AND PRODUCTIONS—The elevation of the country renders excessive heat unknown. In most parts the climate is cold, but the summer in the lower valleys is very pleasant, and the Valley of Kashmir is a favourite resort for people who wish to escape the heat of the Indian plains.

The rainfall is slight, especially in the interior, the dryness of the northern slopes of the mountains accounting for the snow-line being actually higher than on the slopes facing to the south.

FIG 71 — AVERAGE
POPULATION OF A
SQUARE MILE OF
KASHMIR



The forests are important, the chief timber cut being deodar. The field crops are not commercially important, the chief are rice, maize, wheat, barley, and millets. Fruit is of excellent quality, and the beautiful flowers which grow wild have obtained for the country the name of the 'Garden of India.' The mulberry tree grows in the valleys, and supports a thriving silk industry in Srinagar.

PEOPLE.—The population is about 3,000,000 (35 to the square mile), of whom about three-quarters are Muhammadans,

so that Kashmir may be described as a Muhammadan state under a Hindu ruler, just as Haidarabad is a Hindu state under a Muhammadan ruler.

The Kashmiris are tall, well-built, hardy people, and make excellent labourers. There is an admixture of Mongol blood in the people on the Chinese frontier

TRADE.—The trade is with the Punjab, the chief routes being *via* Rawal Pindi, Jehlam, and Sialkot. A railway from Rawal-pindi, *via* Murree, to Srinagar is contemplated, communication being now maintained by the Jehlam Valley Road, one of the finest examples of road-engineering in the world

GOVERNMENT—The state is governed by a Maharajah, who is directly responsible through the British Resident to the Government of India. There are twelve divisions, of which the south-western—Punch, Kashmir, Naoshera, and Jammu—are most thickly populated

TOWNS.—Srinagar (126,000), the capital, is the only large town. It stands on the Jehlam, in a picturesque valley. The river at this point is kept back by banks, and when the melting of the snows brings down an unusually large supply of water, these sometimes break, and the town is therefore subject to floods. A great scheme for lowering the bed of the river by means of mammoth dredgers is now in operation, the electric power being obtained from the river itself. It is hoped by these measures to avoid floods in future.

Jammu is connected with Sialkot by railway.

Leh, on the River Indus in Ladakh, is the most important trade centre of the interior

Gilgit is the outpost of the Empire in the extreme north-west.

2 BALUCHISTAN.

Baluchistan is the most western part of the Indian Empire, stretching from the Sulaiman and Hala Mountains to about the 60th meridian of longitude

Its main divisions are—

1 British and administered territory in the north-east corner of the province—area, about 46,500 sq. miles.

2 The protected native states of Kalat and Las Belas—area, 78,000 sq miles.

3. Tribal areas, semi-independent but subject to the control of the Political Agent in Sibi—area, 7,000 sq miles

The whole of the country has come under British influence since 1873

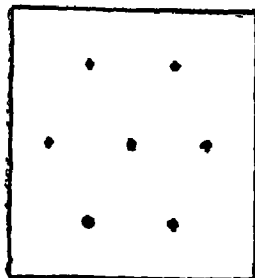
BOUNDARIES.—On the east, Sind, the Punjab, and the N.W.F. Province; on the north, Afghanistan, on the west, Persia, and on the south, the Arabian Sea.

PHYSICAL FEATURES.—Geographically Baluchistan belongs to the great Plateau of Irania, which also includes Afghanistan and Persia. Mountains cross the tableland at intervals, and the whole of the country is desert. An occasional stream is met with, but the small cultivated areas have to be irrigated. This is done by means of water led along underground tunnels (called karezes), which are tapped at intervals by wells.

CLIMATE AND PRODUCTIONS.—Baluchistan, like the remainder of the Iranian Plateau, lies outside the monsoon region, and in the tropical rainless belt. The climate is therefore very dry, and in winter extreme. The thermometer in winter often sinks below zero at night; the elevation prevents excessive heat. The only vegetable product which grows in sufficient quantity for export is fruit, particularly grapes and melons. The villagers grow a little wheat and millet where water is available.

PEOPLE.—The total population is only about 914,000, or one and a quarter that of the city of Bombay. Of these about 396,000 live in British territory. The people are practically all Muhammadans, and nomadic in habits, spending the summer on the plateau, and avoiding the severe winter by migrating to the plains of Sind. They live largely in rude huts, and their wealth consists of a few camels. Nearly three lakhs of the inhabitants are Brahuis who speak a Dravidian tongue; the existence here of this isolated Dravidian tribe has led some authorities to the conclusion that this race came originally into India by this route.

FIG 72 — AVERAGE
POPULATION OF A
SQUARE MILE OF
BALUCHISTAN



GOVERNMENT.—The Agent to the Governor-General is in charge, and he is responsible direct to the Government of India. The Khan of Kalat is amenable to the advice of this officer in all matters of importance in the administration of his territories.

TOWNS.—Quetta was a native town of some importance in the Bolan Pass before the British occupation. It is now the British military outpost for this part of the frontier. The strategic branch of the North-Western Railway from Sukkur runs beyond Quetta to Chaman on the Afghan frontier. Considerable trade is carried on, fruit and carpets being brought in from Persia by caravans.

Kalat, almost due south of Quetta, is the capital of the Khan of Kalat's territory.

3. RAJPUTANA

Rajputana is a collection of twenty native states, with a patch of British territory, Ajmere-Merwara, lying in the centre. The state takes its name from the race of the ruling chiefs (Rajput), to which all but three belong. There is only one Muhammadan state—Tonk.

BOUNDARIES AND AREA.—Rajputana is roughly four-sided in shape, with its diagonals running north and south and east and west. The bounding provinces are, north-west, the Punjab; north-east, the Punjab and United Provinces; south-east, Central India, south-west, Sind and Gujarat.

The area is 127,000 sq. miles. (Compare with the Punjab.)

PHYSICAL FEATURES.—The Aravalli Range runs in a north-easterly direction across the province, dividing it into two well-defined and unequal parts.

1. **Western Rajputana**—This portion extends from the Aravallis to Sind, and includes the Thar Desert. Here (1) the rainfall is very deficient; (2) the country is ill-watered, the Luni being the only river, (3) the soil is sandy and parched; (4) vegetation is very scanty, (5) there are very few towns, (6) the people move from place to place seeking pasturage for their flocks.

2. **Eastern Rajputana.**—This is the smaller section. (1) The rainfall is generally sufficient; (2) the Chambal and its tributaries spread over the whole region, (3) the soil is fertile, (4) good crops are grown, (5) there are many towns; (6) the people live in towns and villages and follow agricultural pursuits.

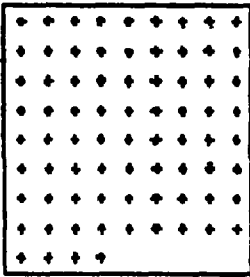
Sambhar Lake lies to the north of Ajmere.

CLIMATE AND PRODUCTIONS.—The climate varies from dry and extreme (similar to Sind) in the north-west to warm or tropical in the south-east.

The lack of rain renders much of the country subject to famine, but there are projects for watering the western half by canals. In the west the only crop that can be grown is millet; in the east, wheat and barley can be grown in the winter, and sugar-cane and cotton in the summer.

PEOPLE.—The population is about $10\frac{1}{2}$ millions, or about 76 to the square mile. The east is much more thickly populated than the west. Only about one-tenth of the people are Muhammadans, and there are about 350,000 Jains, the rest are Hindus.

FIG 73 — AVERAGE
POPULATION OF A
SQUARE MILE OF
RAJPUTANA



STATES.—East of the Aravalli Hills, the chief states are Udaipur, Jaipur, Bhartpur, Alwar, Kotah, and Tonk. To the west, the largest are Bikanir and Jodhpur. Each state has a resident political agent, and the whole Agency is under the charge of the Agent to the Governor-General, whose headquarters are at Ajmere

The small British district of Ajmere-Merwara is also under the control of the Agent

RAILWAYS.—The main lines of the Rajputana-Malwa, and the Bombay, Baroda and Central India Railways (narrow-gauge lines) pass through the province, and there are railway connections eastward with Haidarabad (Sind), and northward with Bhatinda.

TOWNS.—The internal strife among the various states led to most of the chief towns being built in strong natural positions and well fortified

Jaipur (137,000) is the largest city in Rajputana. It is a commercial centre, and has fine public buildings

Udaipur is the capital of the state of the same name. The Raja ranks highest among the Rajput chiefs

Jodhpur and Bikanir are capitals of large arid states in the western half of the Agency.

Ajmere (86,000) stands at a considerable elevation above the surrounding plain, and enjoys a pleasant climate for most of the year. It is the seat of Government, and has a large college for the education of native chiefs.

Abu is a hill station at the southern extremity of Rajputana. It stands at an elevation of 4,000 ft., and is a centre of Jainism.

4. CENTRAL INDIA AGENCY

This is, like Rajputana, a collection of native states. The number of states in Central India (143) is, however, seven times as many as in Rajputana, while the total area is only about two-thirds. The method of control is similar—the states being administered by an Agent to the Governor-General.

BOUNDARIES.—The outline of the Agency can best be understood by a study of the south-eastern side of Rajputana, the southern boundary of the United Provinces, and the northern boundary of the Central Provinces.

A tongue of land projecting southwards from the United Provinces and another northwards from the Central Provinces meet and divide the Agency into two distinct areas, of which the eastern is about half the size of the western.

PHYSICAL FEATURES.—Most of the Agency is occupied by a gently rising tableland, the slope being from south to north. The Vindhya Range traverses the south, and the Satpura Mountains enter the south-western corner.

The western section of the Agency is drained by the Chambal and its tributaries, especially the Kali Sind on the north, and the Narbada on the south.

The eastern section is watered by the Son and other small tributaries of the Ganges.

CLIMATE AND PRODUCTIONS.—The configuration of the surface accounts for the climate, which is hot in the less elevated area to the north and more moderate in the hilly region to the south. The Vindhya Mountains condense the rain-clouds from the west, but their direction permits the rain-bearing winds to penetrate into the interior. The rainfall is therefore good, and increases in amount from the western to the eastern portion of the Agency.

The soil is fertile, and the crops are good. The opium grown on the Malwa plateau in the west is the best in India; other important crops are millet, tobacco, cotton, and sugar-cane. Wheat is a cold-weather crop.

PEOPLE—The population is about $9\frac{1}{2}$ millions, of whom 8 millions are in one state—Gwalior.

The Dravidian element which prevails over South India now

begins to come into evidence. In the hill tracts of the south there are large numbers of Gonds and Bhils.

STATES AND TOWNS.—Some of the larger states have not compact and well-defined areas. Gwalior and Indore, for example, have small pieces of territory scattered away from the main part of the state.

Gwalior State occupies nearly one-third of the whole Agency. Its area is 25,000 sq miles.

The city of Gwalior, or Lashkar (89,000), is the capital, and the largest town in Central India. It stands on a rock fortress of great natural strength. The G.I.P. Railway runs close to the city.

Nimach, on the Rajputana-Malwa Railway, and Ujjain are both situated in Gwalior territory, remote from the main part of the state. The former is a military station, and the latter is celebrated for its Hindu remains.

Indore State lies to the south-east of the Agency. Indore (86,000) is the capital and the headquarters of the Agent to the Governor-General.

Mhow, to the south, is a military cantonment.

Bhopal State is to the east of Indore. Bhopal, the capital, stands on the plateau, and is an important station on the Indian Midland Railway.

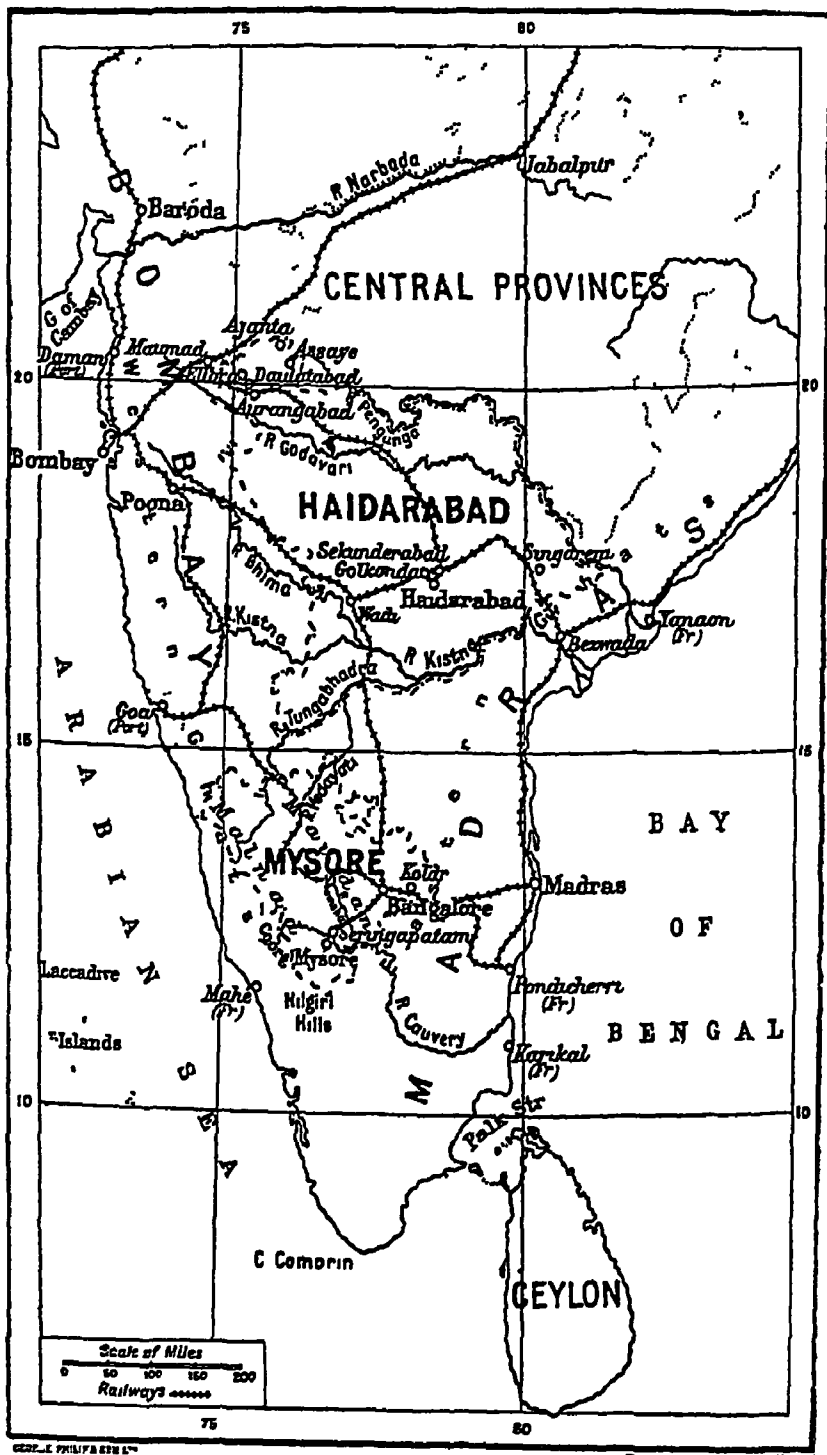
Rewa is the largest state in the eastern section of the Agency, and in point of size is next to Gwalior. The state possesses an important deposit of coal. Rewa, the capital, and the largest town in this part of the Agency, has only 24,000 inhabitants.

5. HAIDARABAD

Haidarabad is the largest native state in the Indian Empire, and lies in the heart of the Deccan. It is entirely an inland state, although the boundary comes within a hundred miles of the coast in the vicinity of the mouths of the Godavari and Kistna.

BOUNDARIES AND AREA—The state is roughly triangular in shape, with the Madras Presidency, the Central Provinces, and the Bombay Presidency along the three sides. It has natural boundaries for a very considerable distance—the Godavari, with

FIG 74—MAP SHOWING PROTECTED STATES SOUTHERN INDIA



Longmans Green & Co. London, New York, Bombay & Calcutta.

its tributary the Penganga on the north; and the Kistna, with its tributary the Tungabhadra on the south.

The area is 82,700 sq. miles. (Compare with Kashmir)

PHYSICAL FEATURES.—The surface is a tableland with its general slope from west to east. There are occasional hill ranges, but none of any great height. The eastern coast-plain penetrates for a considerable distance into the plateau in the lower valleys of the Godaveri and Kistna.

The northern half of the state is drained by the main stream of the Godaveri and its numerous tributaries. The Kistna and its left-bank tributaries, of which the chief is the Bhima, drain the southern half.

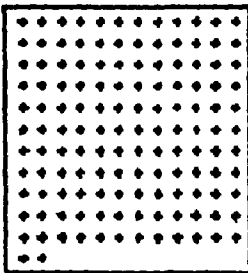
CLIMATE, RAINFALL, AND PRODUCTIONS.—The elevation of the state prevents any great degree of heat, and its southerly latitude protects it from cold, and the climate may best be described as warm. The rainfall, amounting to between 30 and 40 inches, is received mostly during the summer monsoon.

The chief crop is cotton, as in other parts of the Deccan. Other cultivated crops are millet, oil-seeds, and a little wheat, none of which requires much moisture.

Of mineral products, coal, which is found at Singareni in the extreme east of the state, is the most important.

PEOPLE.—The total population is about 18,300,000, of whom only one-tenth are Muhammadans. Haidarabad is therefore a Hindu state with a Muhammadan ruler. The people belong mainly to the Dravidian race, and the languages chiefly spoken are Marathi and Telugu.

FIG 75 — AVERAGE
POPULATION OF A
SQUARE MILE OF
HAIDARABAD



GOVERNMENT.—The ruler of Haidarabad is called the Nizam—a title which has been retained since early in the eighteenth century, when the state was tributary to the Moghal Empire. The Government of India is represented by a Resident.

RAILWAYS.—The railways of the state radiate from Haidarabad, the system being known as the Nizam's Guaranteed State Railway. One branch goes east and meets the Madras Railway at Bezwada; a second runs north-west, meeting

the G.I.P. Railway at Manmad, and a third, travelling west, meets the same line at Wadi.

TOWNS.—**Haidarabad** (500,000) is the capital, and the fourth city in point of population in India. The inhabitants were once well known for their lawlessness but great improvements have been effected in recent years. Near Haidarabad are **Secunderabad**, with the largest military garrison in India, and **Golkonda**, once famous for its diamond cutting and polishing.

In the north-west are **Aurangabad** and **Daulatabad**—ancient capitals; and **Ellora** and **Ajanta**, with remarkable architectural remains in the shape of rock-hewn temples. In the same neighbourhood is the battlefield of **Assaye**.

6. MYSORE

Mysore is the native state occupying the southern portion of the Deccan tableland. The average elevation (about 2,000 ft.) is nearly twice that of Haidarabad.

BOUNDARIES AND AREA.—The state is almost entirely enclosed by the Madras Presidency. The Bombay Presidency borders it for a short distance on the north-west, and Coorg on the south-west. It is an irregular triangle in outline, with one side nearly parallel to the west coast. The area is just under 30,000 sq. miles.

PHYSICAL FEATURES.—To the east and west are the Ghats, which meet in the **Nilgiri Hills**, immediately to the south of the state. The Ghat region to the west is known locally as the **Malnad**, the western plateau as the **Maidan**. The highest part of Mysore is a ridge crossing the middle of the state from east to west. From this the rivers drain north to the **Kistna**, and south to the **Cauvery**. The chief streams flowing into the former are the **Tunga** and the **Vedavati**, and into the latter the **Shamsha**.

CLIMATE AND PRODUCTIONS.—The elevation of the state renders its climate temperate. On the west the monsoon rainfall is heavy, in the rest of the state it only amounts to about 30 inches.

The vegetable products are important. The forests yield valuable timber, especially **teak** and **sandalwood**. In the north

cotton is grown, and in the river valleys sugar-cane and rice, but the most important crop is millet (ragi). Coffee is grown on the slopes of the Western Ghats.

The only important mineral is gold, which is obtained from the Kolar Goldfields, in the extreme east of the state.

PEOPLE.—The inhabitants number $5\frac{3}{4}$ millions, or 188 to the square mile. Of these, 5 millions are Hindus—a larger proportion than in any other province or state in India. The people belong to the Dravidian race, and the language spoken is Kanarese.

RAILWAYS — The Southern Mahratta Railway runs through the middle of the state, a branch going south-west from Bangalore to Mysore

TOWNS.—Mysore (71,000) in the south, is the capital, and the residence of the Maharajah and the British Resident. Seringapatam, a few miles to the north, and the former capital, is now little more than a village

Bangalore (188,000) is the only large city, and a military station. It stands at an elevation of over 3,000 ft., and enjoys a mild climate throughout the year. It is an important commercial centre.

The Kolar Goldfields support a population of 38,000.

COORG

Coorg is a small state to the south-west of Mysore, and is under the control of the British Resident of that state. It has an area of 1,580 sq. miles, and a population of 180,000. The state is mountainous and well wooded. Coffee is commercially the most important product.

THE ANDAMAN AND NICOBAR ISLANDS

These two groups of islands form one end of the great curve which sweeps round from Cape Negrais to New Guinea. Together they form one political division, under the control of a Chief Commissioner. Their importance lies in the fact that Port Blair on South Andaman is the penal settlement for the Empire. The islanders are negritos.

INDEPENDENT TERRITORY

Nepal and Bhutan are two Himalayan states, politically independent, but geographically a part of India. They are separated from each other by Sikkim.

Nepal occupies an oblong strip of Himalayan territory between the 80th and 88th meridians. Its area is about 54,000 sq. miles.

The great northern range attains its greatest height in Nepal, both Mt. Everest and Dhaulagiri being situated in this state. The upper courses of the Gogra, Gandak, and Kusi are the chief rivers.

At the foot of the mountains is the Terai, and this strip, being well watered both by rivers and rainfall, is very productive. A large part is, however, covered with jungle. The chief crops are rice, millets, and oilseeds. The timber is valuable, the chief commercial varieties being sal and sisu.

The population of Nepal is about three millions, or about three times that of Calcutta. A certain number of its hardy and warlike mountain people, called Gurkhas, are drafted every year into the Indian Army.

The capital is Khatmandu, near the centre of the country, and here a British Resident resides.

Bhutan, further to the east, is only about one-third the size of Nepal, the area being just under 17,000 sq. miles.

Like Nepal, it is an entirely mountainous state, the highest peak being Chumalari, about 24,000 feet in height. The drainage of the country is southward into the Brahmaputra, the Manas being the chief stream.

The people of Bhutan are supposed to number less than a lakh, and they are less advanced than the Nepalese. They grow only sufficient produce to satisfy their own needs, and there is practically no trade.

The capital, Punakha, near the centre of the country, is little more than a mountain village, and very little is known about it.

FOREIGN POSSESSIONS

1. FRENCH.—Altogether less than 200 sq. miles.

(1) Chandarnagar, on the River Hugli, (2) Yanaon, on the coast, in the delta of the Godavari, (3) Pondicherry, the residence

of the French Governor, and (4) Karikal, both on the Carnatic coast, (5) Mahé, on the Malabar coast, south-west of Mysore.

2. **PORTUGUESE.**—A little over 1,000 sq. miles.

(1) Goa, a maritime district south of Bombay,

(2) Diu, an island, and (3) Daman, a small town, on opposite sides of the entrance to the Gulf of Cambay.

EXAMINATION PAPERS

- A 1 Describe the physical features of Kashmir. What effect has the elevation upon the climate?
 2 Describe and account for the climate of Baluchistan
 3. What method of irrigation is carried on in Baluchistan?
 4 Contrast as completely as you can Eastern and Western Rajputana
- B 1 What do you understand by the Central India Agency? Mention the four largest native states in it
 2 Compare and contrast the states of Kashmir and Haidarabad
 3 What languages are spoken in Baluchistan, Mysore, and Haidarabad?
 4 Where and what are Nanga Parbat, Leh, Kalat, Rewa, Ellora, Kolar?
- C 1 Write a short account of Nepal
 2 What European Powers have possessions in India? Where are they situated?
 3 What is the form of Government in Kashmir, Sikkim, Central India Agency, Baluchistan?
 4 Compare the area and population of the Protected States with those of the British Provinces
- D. 1 Draw a map of the Indian Empire showing the chief mountain ranges and the rivers which flow from them
 2 Mention the chief lakes of India, and give their situation
 3 Which of the Indian rivers have deltas? Give the reason as far as you can. How far are the 'stages' of Indian rivers typical?
 4 Where in India are the areas of (1) heavy rainfall, (2) deficient rainfall? Give reasons
- E 1 In which parts of the country is agriculture aided by irrigation? What different means are employed in different parts?
 2 Draw an outline map of India and insert on it the names of the chief productions in their proper localities
 3 Illustrate by reference to India the belts of vegetation encountered in climbing from the plains to the snow-line
 4 Where are the chief forest areas of India? What timber is found in them?
- F. 1. Name the chief manufactures of India, and the cities connected with them. Mention also any circumstances that have affected their growth in recent times.

2. With what countries is the trade in the following articles carried on.—opium, jute, wheat, tea?
3. Which parts of India are ruled by a Governor, a Lieutenant-Governor, a Chief Commissioner, an Agent to the Governor-General?
4. Account as far as you can for the different races and languages found in India

CEYLON

POSITION AND SIZE.—Ceylon is separated from India by Palk Strait and the Gulf of Manaar. Although politically distinct, geographically it belongs to India, a number of islands and rocks, known as Adam's Bridge, stretching across the strait, and almost connecting it with the mainland. The island is 270 miles long, 25,000 sq miles in area, and the southernmost point is less than 6° from the Equator.

PHYSICAL FEATURES.—The southern part of the island is mountainous, but the northern part is low. The highest peak, Pedrotalagala, is 8,300 ft. high. There are numerous streams flowing from the mountains, the longest is Mahaweli Ganga, which flows almost due north into Trincomalee Bay.

CLIMATE AND RAINFALL.—The climate is tropical—that is, warm, moist, and equable. The proximity of the sea and the abundant rainfall prevent extremes of heat. The mountainous part of the island in the south gets over 100 inches of rain annually, and even the small, comparatively dry area in the north-west gets nearly 50 inches.

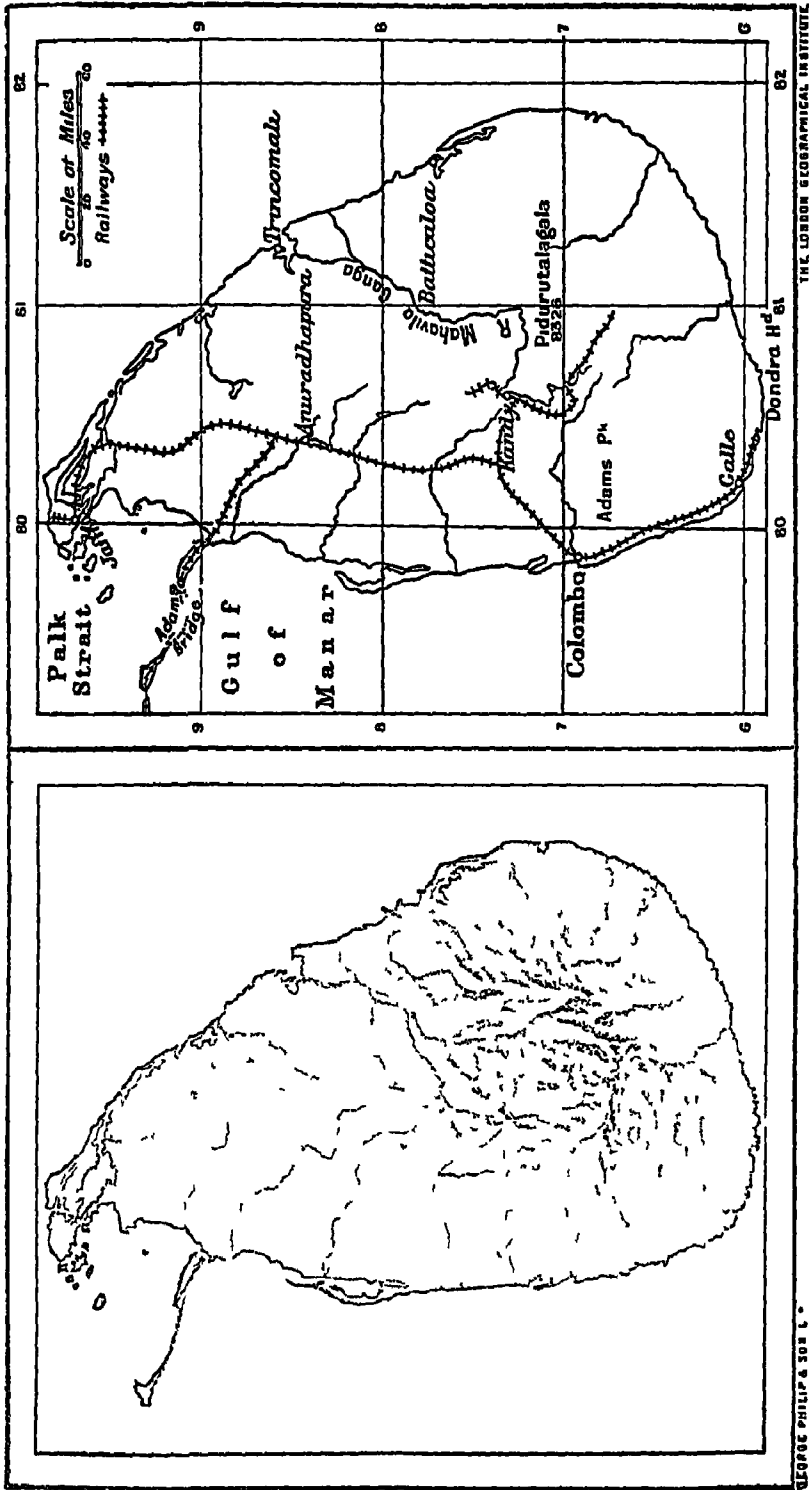
PRODUCTIONS.—The forests produce valuable timber—ebony, satinwood, &c. Cultivated crops are very important, of which the chief is tea, other products are rice, spices, and oil-seeds. Cocoa, rubber, cinchona (for quinine), and coco-nuts are exported, of which rubber is likely to become most valuable to the island in the future.

Of mineral products graphite, or plumbago, and gems are commercially the most valuable. Iron is abundant, but cannot be profitably worked for lack of fuel.

The pearl fishery is a source of considerable revenue.

PEOPLE.—The population is $8\frac{1}{2}$ millions, or 141 to the square mile. Of these nearly $2\frac{1}{2}$ millions are Sinhalese; and of the remainder, Tamils and Moormen (descendants of Arabs) are the most numerous. The former are imported from India in large

RELIEF MAP
FIG 76 — MAP OF CEYLON
POLITICAL MAP.



Longmans Green & Co., London, New York, Bombay & Calcutta

numbers for employment on the plantations. The planting operations of the island are in the hands of Europeans.

The chief religion is Buddhism.

TRADE.—Most of the trade is with British India and the British Isles. The chief exports are tea and coco-nuts, and after these come graphite, cocoa, and spices. Rubber will be an important export in a few years.

The chief imports are food materials, kerosene oil, fabrics, metals, and machinery.

GOVERNMENT.—The island belongs to the British Empire and forms a Crown Colony under a Governor.

The Maldiv Islands, a group of typical coral atolls 500 miles to the west, are under the Ceylon Government.

TOWNS.—Colombo (158,000), on the west coast, is the capital. It enjoys a splendid commercial position on the ocean highway from Europe to Australia and the Far East, and is one of the most important ports of call in the world.

Kandy is the chief town of the interior

EXAMINATION PAPERS

- 1 Describe the physical features of Ceylon, and show the connection between the mountains and river courses.
- 2 Give an account of the climate and rainfall of the island
- 3 What are the chief mineral and vegetable products, and how far are they exported?
- 4 What races of people inhabit Ceylon, and what is the form of Government?

INDO-CHINA

GENERAL DESCRIPTION—The peninsula of Indo-China lies to the south-east of Asia, almost entirely within the Torrid Zone.

The region is divided politically as under —

- 1 The French possess the eastern states of Cambodia, Cochin-China, Annam, and Tongking, and exercise control over the Laos Territory which lies adjacent to the Shan States of Burma. The total area is 383,000 sq miles and the population about 23 millions
- 2 Siam is an independent state which occupies the middle of the peninsula and the eastern half of the Malay Peninsula as far as the Isthmus

of Kra The native states from this point as far south as the 6th degree of latitude are also under the control of Siam Area about 195,000 sq miles (compare with Burma) and population about 5 millions

3 The British possess Burma and the southern end of the Malay Peninsula Part of the latter is under direct British control, and is known as the Straits Settlements, part is protected native territory, called the Federated Malay States.

CONFIGURATION.—Indo-China consists of a broad northern portion, and a long narrow peninsula stretching southwards to within a few miles of the Equator. The Gulf of Siam occupies the south of the larger portion. Compared with India the coast-line is more broken up and, proportionately to area, longer. The shorter arm of the peninsula terminates in Cape Cambodia, and the longer in Cape Roumania, the most southerly point of the mainland of Asia. The Gulf of Tongking, in the north-east, is protected seawards by the Chinese island of Hainan.

RELIEF.—The north, east, and west of the peninsula are very mountainous, a great semicircle of mountains enclosing the vast alluvial plain of Siam and Cambodia.

On the north the mountains of Assam and Upper Burma are continued across the Laos Territory into Tongking. The lower valley of the Red River is an extensive plain.

On the east a mountainous backbone runs through the whole length of Annam, which prevents intercourse between the interior and the coast.

On the west the mountains of Burma are continued southward throughout almost the entire length of the Malay Peninsula.

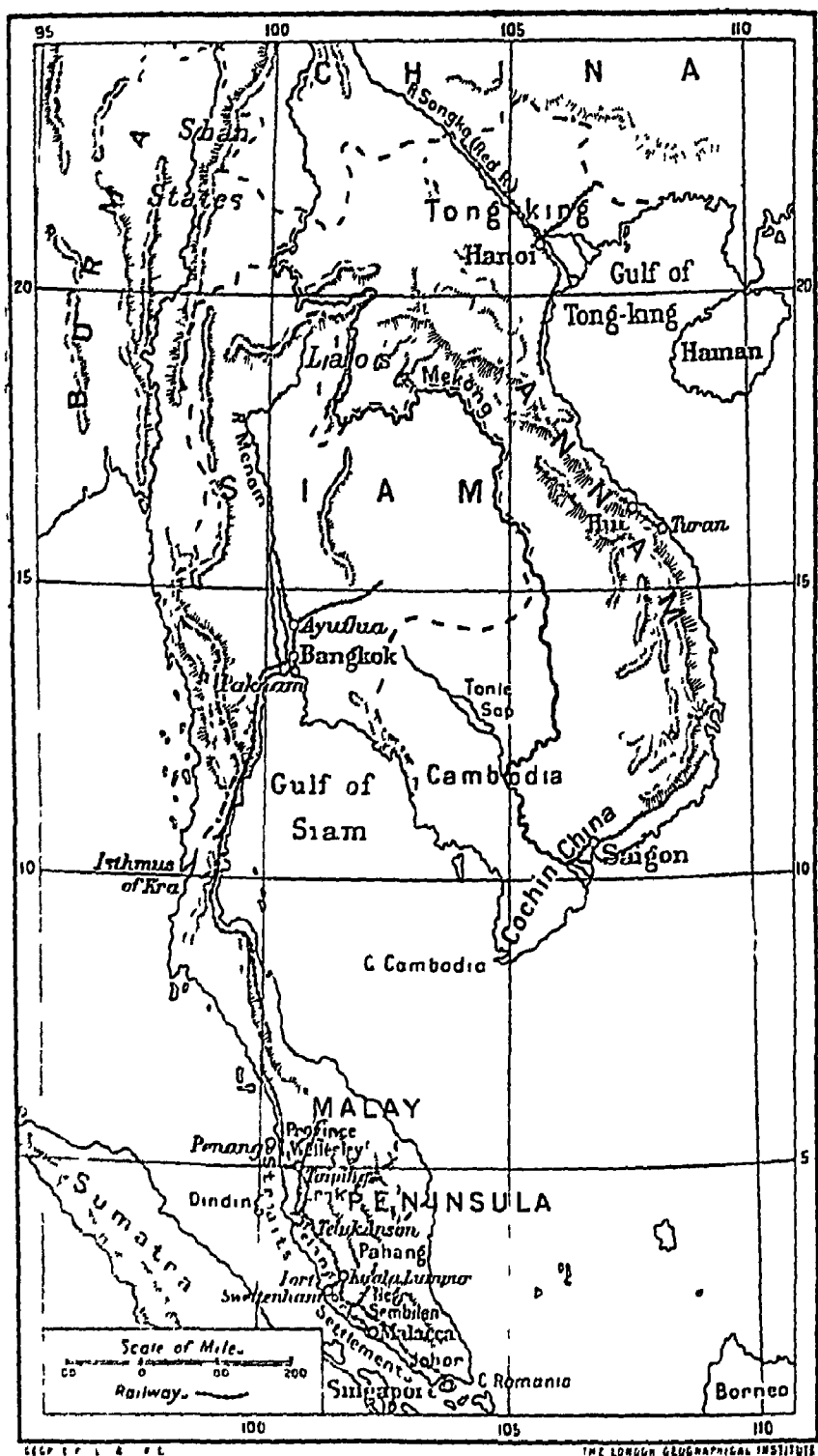
RIVERS.—The rivers, like those of Burma, have a general direction from north to south, with typical stages

The Red River, in the north-east, rises in China and flows into the Gulf of Tongking The delta of this river is gradually silting up, and Hanoi, the capital of Tongking, which was once on the sea coast, is now 60 miles inland

The Mekong flows through China and Burma before entering French territory It forms for a considerable distance the boundary between Siam and Annam A small tributary near the mouth drains the lake Tonle Sap. The delta is extensive, covering nearly the whole of Cochun-China

The Menam flows through western Siam and irrigates one of the great rice-producing areas of the world

FIG 77 —MAP OF INDO-CHINA



CLIMATE AND PRODUCTIONS.—The situation of Indo-China, and the influence of the monsoons, which bring abundant rains from the Indian Ocean and in a lesser degree from the Pacific, cause the climate of the peninsula to be hot and moist.

The fertility of the soil, the tropical heat, and the abundant rains, cause a very luxuriant and varied vegetation. A considerable area is covered with dense forests which produce teak, gum, rubber, bamboo, and many valuable timbers. As in Burma, so in Siam and Tongking, rice is the chief crop, and is grown in vast quantities both for food and export. Cotton, tobacco, indigo, spices, and catechu (obtained from the acacia tree and used in dyeing and tanning) are also largely produced. Silk is made in Tongking.

Of minerals, the tin of the Malay Peninsula is by far the most important, the mines of the Federated Malay States providing more than half the world's supply of this metal.

PEOPLE.—The people of the north of the peninsula are Mongols, and their religions Buddhism and ancestor-worship. The Cambodians are of Aryan origin, and the remains of an ancient civilisation are still traceable. There are only a limited number of true Siamese in Siam, the population being a mixture of Chinese, Burmese, and Malays.

The Malays of the Malay Archipelago are Muhammadans; there are many immigrants from India.

BRITISH POSSESSIONS.—The Straits Settlements.—These consist of—

1 Penang, an island of about 100 sq miles, lying about 350 miles north-west of Singapore. Incorporated in government with Penang are Province Wellesley, a coast strip, 45 miles long, on the mainland opposite the island, and the Dindings, a small island and a small coast-strip 70 miles south of Penang.

2 Malacca, the largest of the Settlements, a coast region 240 miles north-west of Singapore.

3 The island of Singapore, with an area of about 200 sq miles, at the extremity of the peninsula.

Under the government of the Straits Settlements are also included the Keeling or Cocos Islands, to the south of Sumatra, and Christmas Island, south of Java.

The total area of the Settlements is about 1,500 sq miles, and the population over 500,000.

The trade of the Straits Settlements is important, the two ports being

Singapore and Penang, the former of which has about three times as much trade as the latter. The chief exports are tin, spices, and gums, the products of the peninsula, and the imports, rice and cotton goods for food and clothing.

The Settlements are a Crown Colony, under a Governor whose headquarters are at Singapore. Penang and Malacca have each a Resident Councillor.

The town of Singapore is one of the leading ports of the world, being situated at the gateway of commerce between the Indian and Pacific Oceans. The harbour is good, and there are no custom duties, there is consequently a great interchange of commodities. The port is growing rapidly, and has a population of about 300,000.

STATES UNDER BRITISH PROTECTION—The Federated Malay States—These consist of 1 Perak (pron Perú), the most northerly, with an area of 6,500 sq miles and a population of about 494,000.

2. Selangor, south of Perak, area 3,200 sq miles, population about 294,000.

3. Negri Sembilan (the Nine States), south-east of Selangor, area 2,600 sq miles, population about 130,000.

4. Pahang, on the eastern side of the peninsula, area 14,000 sq miles, population about 118,000.

The state of Johore, at the south of the peninsula, opposite the island of Singapore, is under British control only with regard to its foreign affairs.

These states are being rapidly developed under British direction. Tin is extensively mined, and this is at present the chief industry, as the peninsula supplies the bulk of the world's tin. Gold is exported, and many other minerals are found and have still to be developed. Coffee and rubber are cultivated. The latter is an important article of export, more land being planted every year. Railways are developing.

Each state has a Resident, who is responsible to the Governor of Singapore.

The chief towns are Kuala Lumpur, the thriving capital of Selangor, and Taiping, each connected with its port—the former with Port Swettenham and the latter with Teluk Anson.

SIAM.—Although independent of foreign control, and ruled by a king, European influence in Siam is considerable. Each State Department is assisted by a European adviser, many of whom are British.

The natural resources are being rapidly developed, and rice, teak, and tin are exported, the first named in very large quantities. The trade is carried on between Bangkok and Singapore, whence the goods are transhipped.

It is believed that parts of the country are rich in minerals, and steps are being taken to ascertain the extent of the mineral wealth.

Bangkok, the capital, has a population of about 628,000, many of whom

live on the river. Only small vessels can ascend the Menam as far as Bangkok, hence the local trade with Singapore and Hong Kong. Further up the river stands Ayuthia, the old capital.

There is only one line of rail—from Bangkok to Paknam, at the mouth of the Menam, but this line is being continued to join the railway that runs south through the Peninsula. Communications are maintained almost entirely by water.

FRENCH POSSESSIONS—Tongking and Cochin-China are directly under French control, Annam and Cambodia are kingdoms under French suzerainty, the Laos Territory consists of three protected native states.

Railways and trades are being developed, and the rivers afford means of internal communication.

The chief exports are rice and silk. Fishing is carried on, and much fish is also exported.

TOWNS—Hanoi, the capital of Tongking, has a population of about 150,000.

Hue, a port, is the capital of Annam, but Turan, further south, has a better harbour and is near a coalfield, so is likely to develop.

Saigon, a considerable port 34 miles from the mouth of the Mekong, is the capital of Cochin-China.

THE MALAY ARCHIPELAGO

GENERAL DESCRIPTION.—This vast group of islands, lying between Asia and Australia, is naturally divided into two distinct parts. If the sea bed were elevated 100 fathoms, these islands would be found to be continuations either of Asia or Australia. The separation between the two continents would then be a deep channel passing between the islands of Bali and Lombok, in the Lesser Sunda group, and thence through the Molucca Passage. West of this channel the animals and vegetation resemble those of Asia, while to the east they are similar to those of Australia. The Malays, who are the principal inhabitants of the islands lying to the west of this channel, are chiefly Muhammadans in religion. Formerly their piratical habits caused them to be the dread of the traders to the East.

The whole archipelago, which contains the two largest islands in the world (New Guinea and Borneo), is now chiefly under the control of four foreign Powers, the Dutch possessions being by far the most important.

1 The Dutch possess Sumatra, Java, two-thirds of Borneo, the Lesser Sunda Islands, and the Moluccas.

2 The United States possess the Philippines.

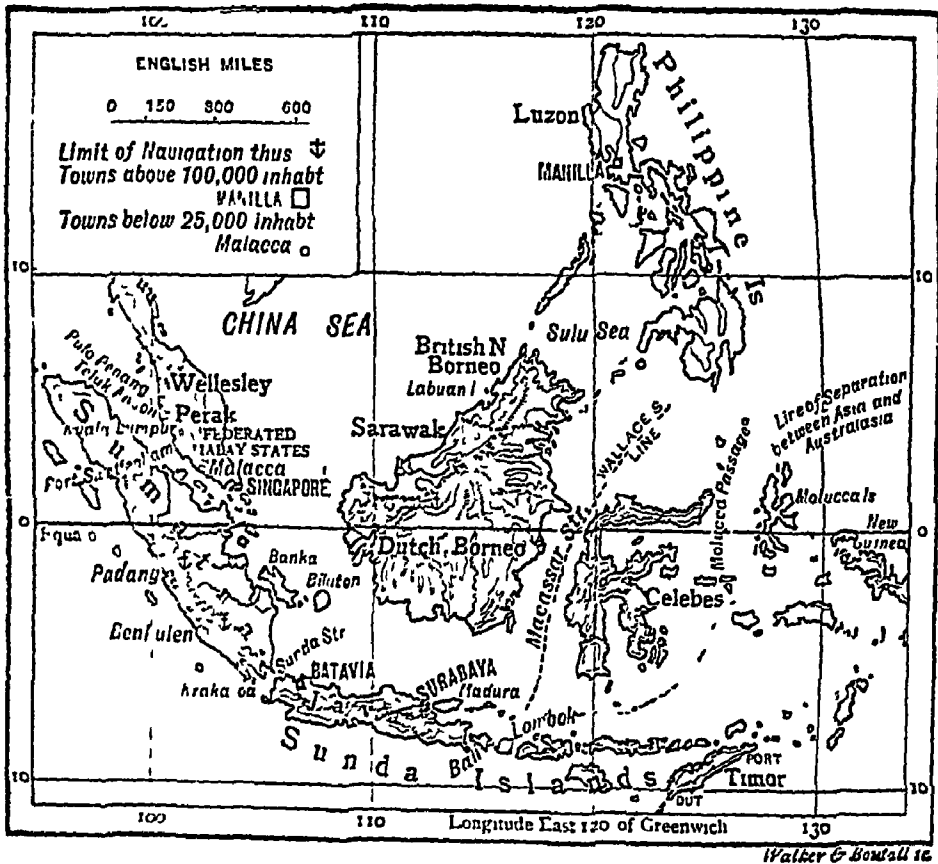
3 The English possess North-eastern Borneo and Labuan.

4 The Portuguese possess part of Timor.

RELIEF.—All the islands are mountainous, and most of them volcanic. Java is said to contain about forty active volcanoes. Earthquakes are prevalent throughout the archipelago.

CLIMATE AND PRODUCTS.—Lying on both sides of the Equator, and being subject to the influence of the monsoons, heat and moisture are the characteristic features. The soil is naturally fertile, and vegetation is nowhere more luxuriant.

FIG 78—THE MALAY ARCHIPELAGO



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Forests cover the mountains. Sago, bananas, and coco-nuts furnish food, while the useful bamboo supplies materials for building and domestic purposes. The lowlands produce coffee, tea, cocoa, sugar cane, cinchona, tobacco, indigo, and spices. The islands of Banka and Billiton are noted for tin, and coal is found in Sumatra, Borneo, and Labuan.

ISLANDS AND TOWNS.—Java is the most populous and productive island in the group. Its area (including the island of Madura) is 50,000 sq miles, and its population 30,000,000, or 560 to the square mile. The principal products are coffee, tea, cinchona, rice, sugar-cane, and tobacco. Batavia (138), the capital, and Surabaya are the most important ports.

Sumatra produces coffee and tobacco, and gutta-percha and camphor trees are found in great abundance. Padang, Benkulen, and Palembang, all on the south coast, are the chief towns.

Borneo has an area of nearly 300,000 sq miles, of which about two-thirds belong to the Dutch. North-eastern Borneo is British territory, and there is a British protectorate over the states of Sarawak and Brunei, along the north coast, and over the island of Labuan, off the same coast. The interior of Borneo is inhabited by the barbarous Dyaks. Tobacco, coffee, pepper, coal, gold, and edible birds' nests are the chief articles of commerce.

Celebes produces coffee, cocoa, and sago. Macassar is the great trading centre of the Eastern Archipelago.

The Moluccas, or Spice Islands, produce cloves, nutmegs, and cinnamon.

The Philippines include about 400 islands, large and small. Luzon is the largest island, and Manila (220) the chief town. The exports are Manila hemp, sugar, tobacco, and cigars.

EXAMINATION PAPERS

- A 1 Give the names and situation of the English and French possessions of Indo-China.
- 2 What are the chief cultivated crops? Name also the most important forest and mineral productions.
- 3 Describe a coasting voyage from Rangoon to Hanoi.
- 4 Account for the importance of Singapore as a port.
- B 1 Which islands of the Malay Archipelago belong geographically to Asia? Give reasons.
- 2 Name the islands belonging to the Dutch. Which is the most important?
- 3 What are the chief products of Java, Borneo, the Moluccas, Sumatra, and Celebes?
- 4 Give the situation of and facts concerning Labuan, Batavia, Macassar, Sarawak, the Molucca Passage.
-

THE CHINESE EMPIRE

GENERAL DESCRIPTION.—This vast empire occupies the whole of South-eastern Asia from Indo-China to Siberia, and from the Pamirs to the Pacific. The great desert of Gobi and the lofty mountains of the south-western border shut off China Proper from the rest of Asia; hence the people have for ages remained apart from the rest of the civilised world, resisting all attempted intercourse with foreigners, and retaining their own

peculiar civilisation, manners, and customs. It naturally forms one compact country, the people belonging to the **Mongol** race, and most of them following the **Buddhist** religion.

The total area of the empire, including its dependencies, is over 4,000,000 sq miles, while its population, according to recent estimates, is about 400,000,000. It is exceeded in area only by the British and Russian Empires, while in population it probably stands first, the most densely peopled portion being **China Proper**, with about 380,000,000 inhabitants.

Between **Mongolia** and **China Proper** a remarkable fortification, known as the **Great Wall**, extends for a distance of over 1,200 miles. Its object was to protect the peaceful inhabitants of the fertile south from the marauding Tartar tribes of the north.

COAST-LINE.—The coast-line is extensive. The channel of **Formosa** leads from the **China Sea** to the **Yellow Sea**, and separates the large and mountainous Japanese island of **Formosa** from the mainland. To the east of the **Gulf of Tongking** lies the extensive island of **Hainan**.

At the northern entrance to the **Canton River** is the small but important British island of **Hong Kong**, a great commercial centre, with a population of 284,000 inhabitants, and our chief naval and military station in the East. **Victoria** is the chief town. **Macao**, a decaying town on the opposite side of the river, belongs to Portugal.

RELIEF.—The greater part of the empire consists of elevated plateaux, reaching in parts of **Tibet** to a height of 15,000 ft. The only extensive lowland district is the **Plain of Northern China**, extending from the mountains north of **Peking** to those to the south of the **Yang-tse-kiang**, and covered with a soil of remarkable fertility known as **loess**.

The two chief plateaux are those of **Mongolia** and **Tibet**. Between these districts there extends a great depression known as the **Han-hai**, or **Dry Sea**. Most of this depression is occupied by the great **Gobi Desert**, stretching from the **Pamir Plateau** to the **Khin-gan Mountains**. Towards the centre the desert narrows considerably, and it is at this point that the shortest and easiest route for crossing is to be found.

The mountains border and cross the plateaux in various directions. The chief ranges are:—

1 The **Tian-shan**, the **Altai**, and other ranges, partly separate **China** from **Siberia**.

2 The Altyn-Tagh border the southern edge of the desert, and are continued to the borders of Manchuria, as the Khin-gan Mountains

3 The Kuen-lun, which extend eastward from the Pamirs, and continue into China Proper as a barrier with few openings between the Hwang-ho and the Yang-tse-kiang basins

4 The Himalayas separate Tibet and India

5 South of the Yang-tse-kiang, ranges which may be regarded as offshoots of the Tibetan Plateau occupy most of the country

DRAINAGE.—China Proper is drained by four large rivers, all flowing into the Pacific.

1 The Pei-ho (*ho* = water), formed by several streams which unite at Tientsin, flows into the Gulf of Pechili

2 The Hwang-ho rises in the Kuen-lun Mountains and flows into the Gulf of Pechili. It is liable to sudden floods and to destructive shiftings of its lower course, sometimes entering the sea to the north and sometimes to the south of the peninsula of Shan-tung. It has occupied its present channel since 1890

3 The Yang-tse-kiang (*kiang* = river), the largest river of China, rises in Tibet, flows for a distance near the Hwang-ho, and discharges itself into the Yellow Sea. It is navigable for ocean steamers to Hankau and for smaller steamers to Ichang, 1,000 miles from the sea. With its tributaries it forms the finest network of waterways in the world

4 The Si-kiang drains Southern China, and is navigable throughout most of its course

Most of the plateaux drain inland to salt lakes, such as Lob-Nor, Koko-Nor, and Tengri-Nor. The Tarim basin is one of the most elevated river basins in the world

The upper courses of the Ob, Yenisei, Brahmaputra, Indus, and the large rivers of Burma lie within the borders of the Chinese Empire

CLIMATE.—On the plateaux hot summers, followed by intensely cold winters, together with general dryness, are the characteristic features. China Proper has a much more equable climate. In the north there is a difference of 60° between the summer and winter temperatures (the Gulf of Pechili is frozen over in winter), this difference diminishes to 20° in the south. All along the east coast the rainfall is abundant, declining as we proceed northwards. Typhoons frequently cause great destruction on the coast of the China Sea.

PRODUCTS.—Trees are scarce on the plateaux, and in China Proper they are cut down to make room for cultivation. The rich yellow soil of the northern plain, and the equally fertile red soil of Szechwan and Yunnan in the middle course of the Yang-tse-kiang, produce most abundant crops

1. Vegetable.—Rice, millet, wheat, barley, maize, sugar, opium, and the mulberry are among the chief objects of cultivation. Medicinal rhubarb is largely grown in the upper basin of the Hwang-ho. Ginseng, which yields a highly prized drug, is grown in Manchuria.

2 Mineral.—China has vast stores of undeveloped mineral wealth. Her coalfields are among the most extensive and richest in the world, but are very little worked. There are also rich deposits of iron, copper, salt, and china-clay. The porcelain made from the last mentioned has long been famous.

The chief exports are tea and silk.

The chief imports are opium and manufactured goods.

TREATY PORTS.—For a long time after the discovery of the sea route to China foreign trade was confined to Canton (900) on the Si-kiang, but the right to trade at other ports along the coast has gradually been acquired until at the present time more than forty ports are open to foreign vessels. These are known as Treaty Ports. Among the more important of these may be mentioned Shanghai (650), near the mouth of the Yang-tse-kiang, which far exceeds all the other ports in the amount of its exports and imports; Chungking, Ichang, Hankau (850), trading centres on the Yang-tse-kiang; Tientsin (700), on the Pei-ho, the port of Peking; Swatow, Amoy, Fuchau (600), Ningpo, and Chifu, on the coast, Niuchwang, in Manchuria.

DIVISIONS AND TOWNS—The Chinese Empire has six main divisions—Manchuria and Mongolia in the north; Dzungaria and Eastern Turkestan in the west; Tibet in the south-west; and China Proper (nearly one-third of the whole area) in the south-east.

There is a very large number of populous towns.

1 China Proper—Peking, the capital, consists of two parts, a Manchu inner part, containing the Emperor's palace, temples, &c., and a Chinese outer part. It is situated in the densely populated province of Pechili, and is said to have a population of a million and a half. Nanking, a former capital, on the Yang tse-kiang, has suffered greatly from rebellions. From Hangchow, on an inlet to the south of the Yang-tse-kiang, the Grand Canal runs 700 miles through the plain of Northern China to Tientsin. Singan, on a tributary of the Hwang-ho, and Chengtu, in Szechwan, are each said to have a population of a million inhabitants.

2 Manchuria has suffered from the consequences of the recent Russo-Japanese war. Mukden (200) is the capital.

3 Mongolia consists mostly of deserts, and is inhabited by nomadic Mongols. Maimachin, on the Russian frontier, is the most important town.

4. Dzungaria—Kulja, the centre of an exceedingly fertile but thinly peopled district, is the chief town.

5 Eastern Turkestan.—Yarkand and Kashgar, starting places for caravans crossing the Pamirs, are the two most important towns

6 Tibet.—Lhasa, the capital, is the residence of the Dalai Lama, the high priest of the Buddhists. The outposts of the Tibetan trade with India are Gartok and Gyantse.

PEOPLE, RELIGION, AND GOVERNMENT.—The Chinese belong to the Mongolian type, of which they are the chief representatives. The language is monosyllabic, there being a separate character for every root idea, and no inflexions.

The people are professedly Buddhists by religion, but 'ancestor worship' is universally followed, the moral precepts of Confucius being held in high repute. The centre of Buddhism is in Tibet, the Dalai Lama residing at Lhasa. There are also about 3 crores of Muhammadans in China, chiefly in the east and north-west. Education is held in great esteem, all Government officials being appointed on the results of examinations.

The Government is a Republic, with a President, a Vice President, a Senate, and a House of Representatives.

CHUSEN

Chusen is a mountainous peninsula lying between the Yellow Sea and the Sea of Japan. It has an area of 86,000 sq miles (compare with Haidarabad State) and a population of about 10,000,000. It was formerly tributary to China, but the China-Japan war of 1894 resulted in the recognition of its independence. Russia, anxious to get an outlet on the Pacific in temperate latitudes, threatened Japan's supremacy, and the treaty of 1905, drawn up after the Russo-Japanese war, while retaining Korea's independence, recognised the paramount interest of Japan. Korea became part of the Japanese Empire in 1910 under the name of Chusen.

The people are of the Mongolian race, and follow the same religions as the Chinese.

Se-ul is the capital, and Chemulpo, near the capital, the chief port.

Ginseng (a Government monopoly) is the chief product and export, and British manufactured cotton the chief import.

THE JAPANESE EMPIRE

GENERAL DESCRIPTION.—Japan, or Nippon, as the Japanese term it, is an island empire, commencing from the

peninsula of Kamchatka in the north, and extending as far as and including Formosa in the south. It comprises—

1. The Kurile Islands, stretching across the entrance to the Sea of Okhotsk.
2. The southern half of the island of Sakhalin, ceded by the treaty of 1905.
3. The group of islands lying to the east of and enclosing the Japan Sea, and comprising the four large islands of Hokkaidô (Yezo), 36,000 sq. miles; Honshiu, 87,000 sq. miles; Kiushiu, and Shikoku
4. The Riu-kiu (Lu-chu) Islands, enclosing the Yellow Sea.
5. Formosa, 13,500 sq. miles, acquired by Japan from China in 1895.
- 6 Chusen, annexed to Japan in 1910
- 7 Kiaochow, transferred from Germany by the Peace Treaty (1919).

The Japanese Empire thus stretches over about 28 degrees of latitude, or nearly 2,000 miles, and has an area (including Chusen) of about 175,500 sq miles. The population is about 54,000,000, most of whom inhabit the islands of Honshiu (Hondo), Kiushiu, and Shikoku. Hokkaidô is inhabited by a scanty coast population, chiefly engaged in fishing.

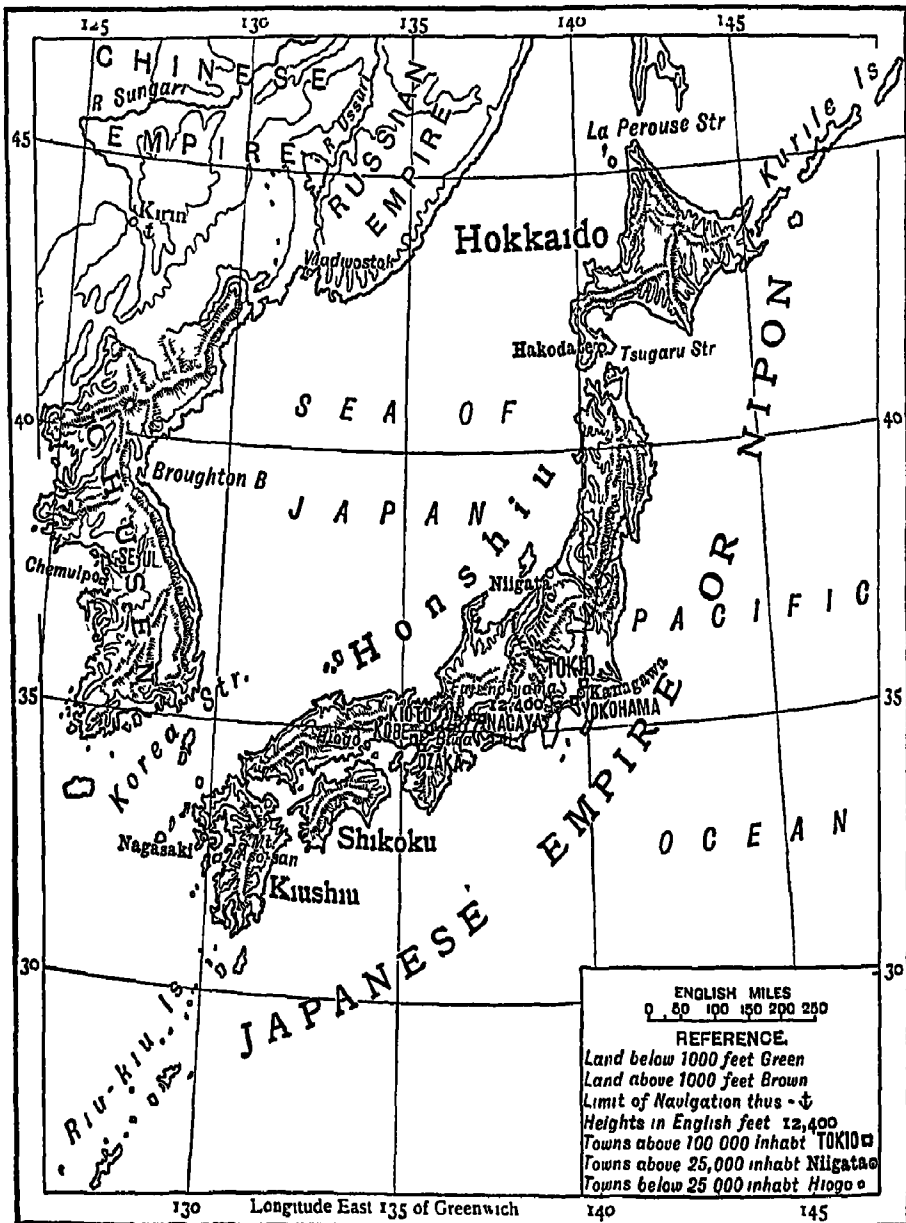
COAST-LINE.—The coast is extensive, with many small inlets forming good harbours. The three principal straits are: La Pérouse Strait, separating Sakhalin from Hokkaidô; Tsugaru Strait (Sangar), between Hokkaidô and Honshiu, and Korea Strait, separating Japan from Korea.

RELIEF—The whole group is very mountainous, most of the peaks being active volcanoes. Fujiyama, the highest, exceeds 12,000 feet. Owing to the mountainous character of the surface, the rivers are useless for navigation, and bring down so much débris that they choke up the harbours into which they flow.

CLIMATE.—Japan extends for nearly 2,000 miles from north to south, and the islands lie in the temperate zone, they are very mountainous in character, the prevailing winds blow from the Pacific Ocean, the northern islands are washed by a cold current from the Arctic Ocean, and the southern ones by the warm Japan Current (Kuro Siwo). These facts account for the diversity of the climate, generally cold in the north and warm in the south. The mountainous backbone, the warm Kuro Siwo, and the prevailing east winds render the eastern coasts warmer and wetter than the western

PRODUCTS.—The rich volcanic soil, the warm summers, and the abundant rains render the lowland districts exceedingly productive. Owing to the mountainous character of the surface,

FIG. 80—JAPAN PHYSICAL AND POLITICAL



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Walker & Routledge

less than one-third is available for cultivation; but this is tilled with such great care and skill that a dense population (270 to the square mile) is supported.

1 **Vegetable.**—Rice is the chief food plant, but crops of wheat, barley, and millet are also extensively grown. Other important products are tea, silk, cotton, and tobacco. The chief trees are the camphor, gum-varnish, mulberry, and bamboo. Forests, chiefly of conifers, cover the mountain sides.

2 **Mineral.**—Coal, iron, copper, antimony, silver, gold, sulphur, and china-clay are abundantly distributed.

MANUFACTURES.—Japan is making great strides in manufacture, the Government encouraging the establishment of machine industries. There are large steel works, cotton and silk goods are manufactured, and the existence of timber and sulphur has led to an important industry in matches. Bronze-work, porcelain, and lacquer-work are renowned.

EXPORTS.—The chief exports are silk, tea, rice, coal, porcelain, lacquered ware, and camphor.

IMPORTS.—The chief imports are cotton and woollen goods, sugar, petroleum, machinery, and ships.

TOWNS.—The capital is Tokio (2,186), a city of vast extent, situated on the largest plain in Honshu. It manufactures bronzes and lacquered ware, and is a treaty port. Yokohama (394) and Kanagawa are also treaty ports on the same bay. The former is the most important seat of European trade. Kyoto (442) the ancient capital, is the chief centre of learning, art, and religion in Japan, and manufactures bronzes and porcelain. Osaka (1,226) and Kobe are both important treaty ports. Nagasaki, a treaty port on the island of Kiushu, has a splendid natural harbour, with a coalfield close at hand. Nagata is the only treaty port on the north coast of Honshu. Hakodate is the chief treaty port of Hokkaido.

PEOPLE AND GOVERNMENT.—The people belong to the Mongol race, and are mostly Buddhists in religion. They are brave, lively, courteous, and quick in acquiring knowledge. Like the Chinese, they showed the same jealousy of foreign intercourse and had attained a high degree of civilisation before coming into contact with Europeans. Lately, however, a remarkable change has taken place. Universities, schools, and colleges have been established, railways have been laid down, factories have been built, and many Japanese youths have been sent to foreign countries to extend their education.

The ruler of the Japanese is called the Mikado, and a constitutional form of government, somewhat similar to that of European countries, has taken the place of the old despotic system.

EXAMINATION PAPERS

- A 1 Give the approximate area and population of China. Give any reasons why the Chinese have been so long isolated from the rest of the civilised world.
- 2 Where is the Han-hai? Describe its surface, and say where it can be most easily crossed.

- 3 Show how the mountains of China mostly start from the Pamir Plateau
- 4 Describe the four chief rivers of China
- B 1. Why is the climate of the plateau so extreme?
- 2 What are the chief agricultural products of China? What do you know of the 'yellow soil' and 'red soil'?
- 3 What districts produce rice, rhubarb, ginseng, tea, bamboo, china, clay?
- 4 What are the 'treaty ports'? Give the names and situation of the principal
- C 1. Give the situation, and say what the following are noted for —
Yarkand, Maimachin, Lhassa, Tientsin, Macao, Hainan, Mukden, and Se-ul
- 2 Compare the people of China with those of Japan
3. Give the names and situation of the chief Japanese islands
- 4 Why are the chief seaports of Japan situated on the eastern side of the islands?
- D 1. What are the principal products of Japan, and why is the population of the southern large islands so dense?
- 2 Give some account of recent changes in Japan
- 3 In what industries do the Japanese excel? Where are they carried on?
- 4 Account for the variety of climate in different parts of the Japanese Empire

ASIATIC RUSSIA

GENERAL DESCRIPTION —This consists of the whole of Northern Asia, from the shores of the Arctic Ocean to the borders of the Chinese Empire, Afghanistan, Persia, and Turkey. Throughout this vast dominion, which embraces more than one-third of the continent, the Russians have already become the most important element of the population, the two principal occupations—agriculture and mining—being chiefly in their hands. The native races are in most cases gradually decreasing; stock-rearing on the steppes and upland regions, and the hunting of fur-bearing animals in the forest regions, are their most important pursuits

Asiatic Russia is divided into three distinct regions, having an approximate area and population as follows —

- | | |
|-------------------------|--|
| 1 Siberia, | 5,000,000 sq miles, 8,700,000 inhabitants |
| 2 Russian Central Asia, | 1,300,000 sq miles, 10,000,000 inhabitants |
| 3 Caucasia, | 95,000 sq miles, 17,000,000 inhabitants |

COAST-LINE.—The north coast is blocked with ice for most of the year, and there is little or no communication with the great rivers which flow into the Arctic Ocean. On the east coast the large island of Sakhalin is used by the Russians as a convict settlement. The most important harbour is Vladivostok, a naval station on the Sea of Japan, the only port which is open for more than half the year.

1. SIBERIA

RELIEF.—The surface of Siberia consists of a vast plain in the north and west, sloping towards the Arctic Ocean, and of tablelands and mountain ranges in the south and east

The southern mountain system consists of several ranges intersected by river valleys. The principal ranges are the Altai (11,000 ft.), Yablonoi, and Stanovoi Mountains

Towards the east this system is continued along the peninsula of Kamchatka by a lofty range containing many active volcanoes

Between Europe and Asia are the Ural Mountains.

RIVERS AND LAKES.—The rivers of Siberia, with the exception of the Amur, flow into the Arctic Ocean, hence, although of great size, they are of small importance commercially. In addition, the navigation, even of their upper courses, is blocked by ice for nearly half the year. There are four great rivers —

1. The Ob (2,100) rises in the Altai Mountains, and with its great tributary the Irtysh drains the whole of Western Siberia

2 The Yenisei (3,200) rises in the Mongolian Plateau Its chief feeder, the Angara, drains Lake Baikal, the largest fresh-water lake in Asia

3 The Lena (3,000) rises near Lake Baikal, and forms an extensive delta at its mouth

4 The Amur (3,000) rises in the Stanovoi Mountains, and flows eastward through a fertile region to the Sea of Okhotsk

The Amur, being free from ice for half the year, is likely to become of greater importance than the other Siberian rivers

CLIMATE AND RAINFALL.—The characteristic features of the climate of Siberia are dryness and excessive cold. The winter lasts for nine months, and during the greater part of the year the ground is covered with snow In the tundras of the extreme north the soil is always frozen a little distance below

the surface. The excessive cold prevents much evaporation, and thus the scanty rainfall which falls during the short, hot summer enables good grain crops to be raised in the valleys of the south. The range of temperature is most remarkable. Around Yakutsk the difference between summer and winter temperature is over 100° , while in corresponding latitudes on the coast of Norway the difference is not more than 25° . The south-eastern is the only district where the rainfall is abundant.

PRODUCTS.—In the southern region good crops of grain, especially wheat, are raised. Furs are the most important product of the forest region, while fossil ivory is obtained from the desolate tundras. On the steppes and upland regions, large herds of horses, fat-tailed sheep, and camels are reared. Siberia is also rich in minerals, of which gold is the most important. The chief goldfields are situated in Eastern Siberia. Silver, graphite, iron, lead, copper, and coal are widely distributed, but are not worked to any great extent.

Means of Communication and Towns.—The rivers are available for traffic only in summer. A railway now runs across Siberia from Ekaterinburg to Vladivostok and Port Arthur.

Irkutsk is the capital of Eastern Siberia, and Omsk of Western Siberia.

Kiakhta is a town with important trans-frontier trade with China, the tea, silk, &c, of that country being exchanged for the ivory, furs, &c, of Siberia.

2. RUSSIAN CENTRAL ASIA

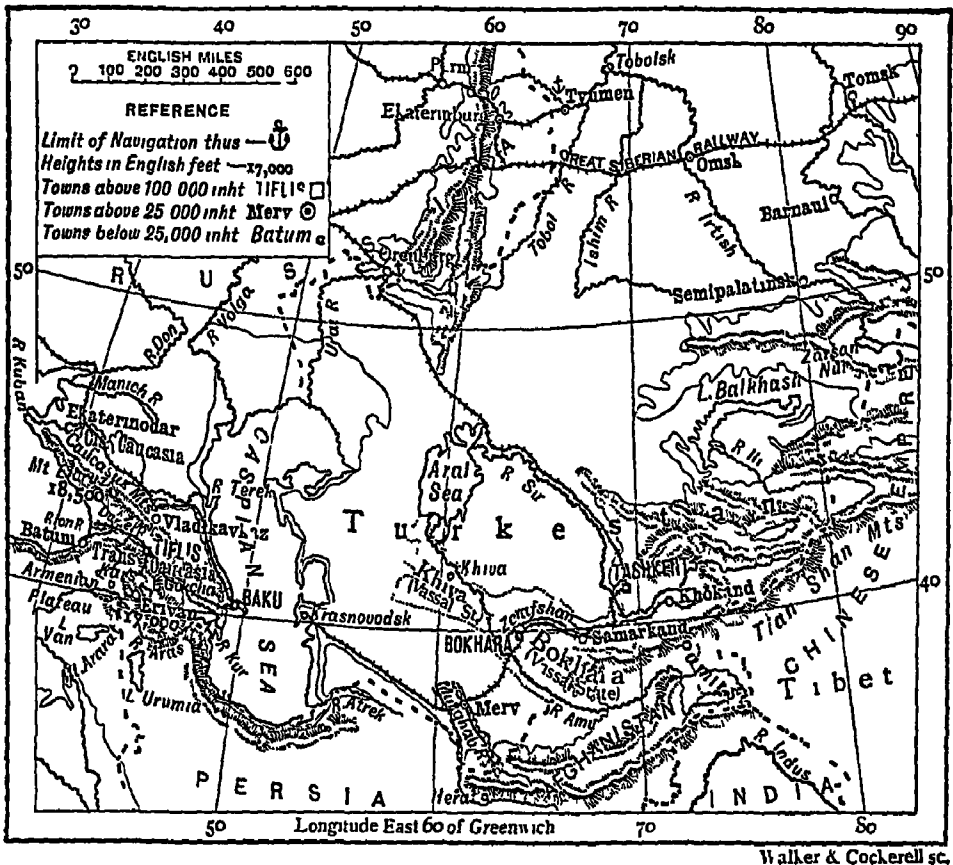
POSITION.—This large district extends from the Caspian Sea westwards to the frontiers of the Chinese Empire, and from Persia and Afghanistan northwards to the neighbourhood of Omsk.

RELIEF.—The surface of Russian Central Asia consists of an elevated region in the south-east, and a lowland plain, sloping towards the depression occupied by the Caspian Sea. The highland region rises in the east to the Pamir Plateau and the Tian-shan Mountains, some of the peaks being 25,000 ft. high. The lowlands, consisting mostly of desert steppes, contain the largest depressed area in the world, the Caspian Sea, which occupies the lowest part, being 84 ft. below the level of the Black Sea. Numerous salt lakes, of which the Caspian Sea, the Sea of Aral, and Lake Balkhash are the largest, are distributed over this plain.

These salt lakes may be regarded as the remnants of the vast inland sea which formerly communicated with the Black Sea on one side and the Arctic Ocean on the other.

CLIMATE, PRODUCTS, AND PEOPLE.—The climate is, on the whole, exceedingly dry. In some parts of the western steppes rain sometimes does not fall for several years. The summers are very hot, while the winters are intensely cold. The melting of the snow and the slight rainfall on the Tian-shan

FIG 81—CENTRAL ASIATIC RUSSIA



feed the rivers, which supply the water for irrigation, without which cultivation would not be possible.

Agriculture is carried on in the valleys of the south-east and by the river courses. Grain crops and fruits of excellent quality are produced. Cotton is the most important commercial product, and is largely cultivated by the Usbeks of Khiva and Bokhara. The Kirghiz of the northern and the Turkomans of the southern steppes rear great numbers of horses, cattle, sheep, and camels.

RIVERS AND TOWNS.—The rivers all drain inland; some into salt lakes, while others are dried up in the desert. The towns are the centres of cultivated oases, and depend upon the rivers for their water-supply.

1 The Amu (1,300) rises in the Pamir, supplies the dependent States of Bokhara and Khiva with water for irrigation, and flows into the southern end of the Sea of Aral. Khiva is a small town, only important as the centre of a cotton-producing district.

2 The streams which supply the oases of Samarkand, Bokhara, and Merv with the water on which their fertility depends, formerly drained into the Amu, but are now dried up in the desert.

3 The Sir (1,350) rises in the Tian-shan, and flows into the northern end of the Sea of Aral. Khokand (54) is an important trading centre, and Tashkent (155), the largest town in the district, is the centre of the Russian administration.

4 The Ili drains a fertile valley and flows into Lake Balkhash.

The most important means of communication is the Trans-Caspian Railway, which extends from the Caspian to within a short distance of Chinese territory.

3. CAUCASIA AND ARMENIA

POSITION—Caucasia consists of the neck of land lying between the Black and Caspian Seas, and including the regions lying immediately north and south of the great Caucasus Range.

RELIEF.—The surface consists of—

1. The Northern Steppes, a continuation of Southern Russia as far as the Caucasus Mountains.

2. The Caucasus Mountains, of which the highest peak is Mount Elburz, 18,000 ft. Near its centre, the range is cut into two parts by the Gorge of Darnel, through which road communication from north to south is maintained.

3. The Armenian Plateau.—The highest peak, Mount Ararat, is situated at the junction of the Russian, Turkish, and Persian Empires.

CLIMATE, PRODUCTS, AND PEOPLE.—North of the mountains (Cis-Caucasia) the climate is dry and cold. Good crops of cereals can be raised wherever water is procurable. A considerable portion of this district is only inhabited by nomadic Tartar tribes. The settled inhabitants are chiefly Russians. The southern side of the mountains is warm, abundant rains fall on

the portion facing the Black Sea, and the vegetation of this district is therefore most luxuriant, fruits of various kinds, especially grapes and stone fruits, growing in great perfection. The Armenian Plateau is much colder and drier, and the people are chiefly engaged in pastoral pursuits.

The chief products of this region are the minerals. Petroleum is the most important; vast quantities are sent from Baku, both by ships on the Caspian and by rail to Batum, whence it is shipped to other countries. Rich deposits of manganese, copper, iron, coal, and salt also exist

The valleys of the Caucasus are inhabited by a number of tribes, of whom the Georgians of the Kur Valley are the most important. The Armenians of the south are the great traders of the surrounding districts and profess an ancient form of Christianity

TOWNS.—Tiflis (303), the capital, stands at the southern end of the high road through the Gorge of Dniel, and midway along the line of rail between the Caspian and Black Seas. It is therefore an important trading centre

Baku (206), the centre of the petroleum trade, is at the Caspian end of this railway line, and Batum, the port from which the oil is exported, at the Black Sea end

EXAMINATION PAPERS

- A 1 Give the approximate area and population of the three great divisions of Asiatic Russia
- 2 Describe the surface of Siberia
- 3 Account for the extreme coldness and dryness of the climate of Siberia.
- 4 Mention the great rivers of Siberia. State where they rise, and indicate the extent of their basins
- B 1 What are the principal products of—(1) the steppes, (2) the forests, (3) the southern valleys, (4) the tundras?
- 2 Describe the railway systems of Asiatic Russia
- 3 Give the situation, and say what you can of Kiakhta, Irkutsk, Omsk, Lake Baikal, Ekaterinburg
- 4 How would you account for the numerous salt lakes of Russian Central Asia? Name the chief
- C 1 Why is the district east of the Caspian extremely dry?
- 2 Where do the rivers originate which flow into the Sea of Aral?
- 3 Where and how is agriculture carried on in Russian Central Asia, and what are the chief centres?
- 4 Describe the surface of Caucasia
- D 1 Where are—(1) the vegetable, (2) the mineral products of Caucasia most abundant?

- 2 Describe the most important means of communication in Caucasasia and Russian Central Asia.
- 3 Why are the following important.—Batum, Baku, the Gorge of Darel, Tiflis, Tashkent?
- 4 Where are the following peoples found.—Kirghiz, Armenians, Georgians, Usbeks, Turkomans?

ASIATIC TURKEY

GENERAL DESCRIPTION—The Turkish Empire in Asia consists of Anatolia or Asia Minor. Its area is probably about 170,000 sq miles and its population, according to recent estimates, about 8 millions.

In the south and west the nomadic Arabs and Kurds are, in many cases, almost independent of the Sultan. The neglect of irrigation works, and the apathy and misrule of the Turks have caused many districts once well cultivated and densely peopled to become barren wastes, roamed over by a scanty population of wandering tribes.

The whole country possesses great historical interest. Syria was the seat of the ancient Jewish and Syrian monarchies, while Mesopotamia was the centre of the mighty Assyrian, Babylonian, Persian, and Arabian Empires when at the height of their power. Nineveh, Babylon, Sidon, Tyre, Ephesus, and many other cities, once famous, are no longer inhabited, while several existing cities have greatly declined from their former prosperity.

AREA.—The area is nearly 695,000 sq miles.

COAST-LINE—The coasts of the Black Sea and Syria are comparatively unbroken, with few good harbours. The west coast of Asia Minor is more broken, and is studded with numerous fertile islands of great beauty.

Cape Baba is the most westerly point of Asia, and the Gulf of Smyrna is the most important opening.

The island of Cyprus has been under British administration since 1878. Nicosia is the capital and Larnaca the chief port. Wine, corn, and cotton are among its chief products.

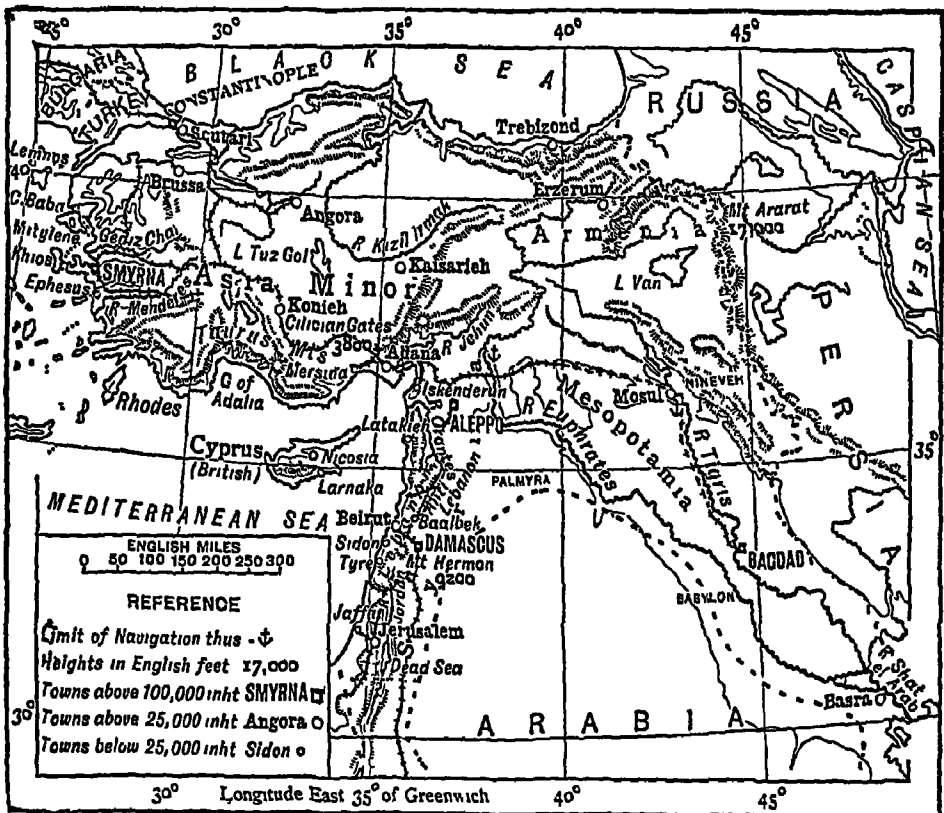
RELIEF.—The physical regions of Asiatic Turkey are—

1. The lowland plain of Mesopotamia, which is continued southward along the western shores of the Persian Gulf. Meso-

potamia was once one of the most fertile and populous districts of the world, but now, owing to the neglect of the irrigation works, it is very little cultivated, and possesses a scanty population depending chiefly upon the produce of their flocks and herds.

2 A highland region, consisting of the Plateaux of Asia Minor, part of Armenia, and Syria. The plateau of Asia Minor is bordered by mountains on the north and south. Towards the west valleys of great beauty and fertility open towards the Ægean

FIG 82—ASIATIC TURKEY. PHYSICAL AND POLITICAL.



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Sea. The centre of the plateau is occupied by an extensive salt steppe, containing many salt lakes. The Taurus Mountains on the south rise to a height of 13,000 ft.

The Armenian Plateau is more elevated than that of Asia Minor, and is crossed by mountain ranges, the highest point of which is Mount Ararat, 17,000 ft.

In Syria two parallel mountain chains, Lebanon and Anti-Lebanon, 10,000 ft. high, trend southwards, and are continued through Palestine to the mountains of Sinai and Arabia. Between

these ranges is a trough, the southern part of which forms the most remarkable depression in the world, the Valley of the Jordan. In the lowest part of this depression lies the Dead Sea, the surface of which is nearly 1,300 ft. below that of the Mediterranean. The eastern portion of Syria is a sandy desert extending into Arabia.

The Red Sea coast-strip consists of a narrow plain, backed by a range of low mountains which form the edge of the Arabian tableland. (See under Arabia, page 228.)

RIVERS.—The position of the mountains and the deficient rainfall cause the country to be poorly supplied with navigable rivers. The chief are —

1 The Euphrates (1,800) and Tigris (1,100) Both rise in Armenia, flow through Mesopotamia, and after uniting in one stream, the Shat-el-Arab, enter the Persian Gulf

2 The chief river draining into the Black Sea is the Kızıl Irmak, and

3 Of those draining into the Mediterranean, the chief is the Orontes

4 A large part of Turkey in Asia drains inland. In Armenia, Lake Van receives the drainage of a beautiful basin, and in Asia Minor many streams flow into salt lakes. In Syria the Abana rises in the Lebanon Mountains, and after supplying the fertile oasis of Damascus drains into a shallow lake. The Jordan rises in Mount Hermon, flows through the Sea of Galilee, and empties itself into the Dead Sea, an intensely salt lake about 50 miles in length

CLIMATE—The climate is exceedingly varied. On the plateaux of Asia Minor and Armenia the winters are severe, and the summers excessively hot. In Syria and Mesopotamia the winters are mild, while the summers are exceedingly sultry, the hot winds from the desert scorching up the vegetation. The rainfall is very deficient on the plateaux, but abundant on the Black Sea coasts and parts of the Lebanon Range.

PRODUCTS.—The districts bordering on the Black Sea have a dense vegetation, forests clothe the mountain sides, and a great variety of fruit trees grow in abundance.

The valleys near the Mediterranean are exceedingly fertile. Wheat, barley, sesame (for oil), valonia (acorn cups used for dyeing, &c.), opium, raisins, figs, olives, gums, and cotton, are important exports; silk is a thriving industry on the Lebanons and at Brussa, tobacco at Latakiah. Jaffa is noted for oranges, and excellent sponges are obtained from the Mediterranean coast. From the plateau the wool of the fat-tailed sheep, the mohair of the Angora goat, and carpets, are exported. Mesopotamia produces excellent dates.

Means of Communication and Towns—The bulk of the traffic is still conveyed by camel caravans, but these are being gradually replaced by railways

The Tigris and Euphrates are important highways. Large steamers can reach Basra, and thence goods are carried by smaller craft for hundreds of miles, as far as the edge of the Armenian Plateau

Smyrna (375), the most populous town in Asiatic Turkey, is a place of great trade and a railway centre. It possesses a fine harbour

Beirut is the chief port in Syria

Damascus (260), the capital of Syria, is situated on a fertile oasis, and is one of the oldest cities in the world

Jerusalem, which is connected by railway with its port, Jaffa, is a city sacred to Christian, Jew, and Muhammadan

Baghdad (225), once the capital of the Arabian Empire, is still the largest town in Mesopotamia and a river port with considerable trade

PEOPLE—The population of Asiatic Turkey is estimated at 18 millions. The Turks form the bulk of the inhabitants of Asia Minor, and are chiefly engaged in agriculture. Arabs are most numerous in Syria and Mesopotamia. Greeks are an important part of the population of the western towns and islands, where they have monopolised the trade and the learned professions. Armenians, in a like manner, are the traders of the eastern districts. The warlike Kurds are numerous on the eastern boundary. These, with many other peoples, Syrians, Turkomans, Circassians, Jews, &c., make up the mixed population under Turkish rule. The Turks, Arabs, Kurds, Turkomans, Circassians, &c., are Muhammadans. The Greeks, Armenians, and Syrians are Christians.

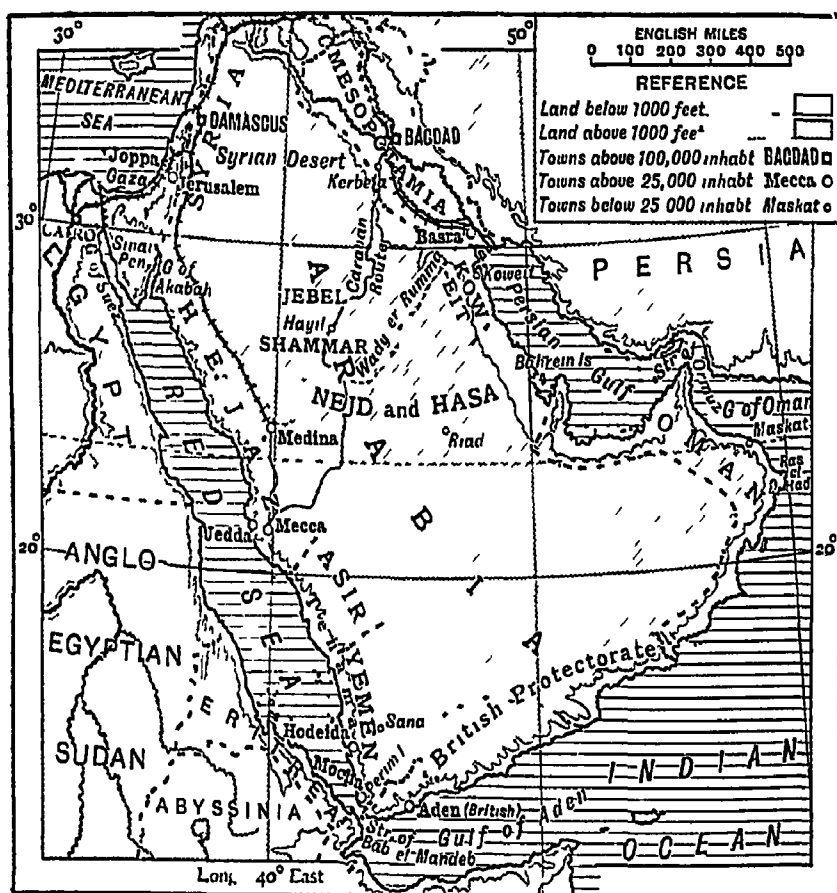
ARABIA

GENERAL DESCRIPTION.—Arabia is a compact country situated at the south-western corner of Asia, and separated from Africa by the long and narrow Red Sea, which for 1,800 miles washes its western shores. Its coast-line is uniformly unbroken; its surface is mostly desert; its climate is uniformly dry, and, except in a few highland districts, exceedingly hot; its products vary but little throughout; and its people, the Arabs, are all of the Semitic race, and follow the Muhammadan religion. It is the largest peninsula in the world, having an area of about 1,000,000 sq miles, while its population is estimated at not more than 5,000,000.

COAST.—There are but few good harbours, and the Red Sea coast abounds in dangerous coral reefs. The most important features are —The rocky Peninsula of Sinai, between the Gulfs

of Suez and Akabah; the Strait of Bab-el-Mandeb, connecting the Red Sea with the Gulf of Aden; and the Strait of Ormuz, which unites the Persian Gulf with the Gulf of Oman. The only islands of note are Perim, which commands the entrance to the Red Sea; and the Bahrein Islands, the centre of the pearl fishery of the Persian Gulf

FIG 83—MAP OF ARABIA



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RELIEF.—The surface consists of an extensive plateau sloping towards the east, with narrow lowland strips on the shores of the Red Sea and Persian Gulf. On the western side of the plateau the mountains follow the coast-line, rising in the peninsula of Sinai to a height of 9,000 ft. In the interior the district of Nejd contains many fertile oases; the rest is comparatively unknown desert

CLIMATE—The position of Arabia in the tropical latitudes of low pressure, in which also lie the Sahara, the desert regions

of Persia, Baluchistan, Sindh, and Rajputana, together with the fact that the prevalent winds are from the land, account for the extreme dryness and heat of Arabia. The whole peninsula is a nearly rainless district, even in the highlands of Yemen and Oman, which receive moisture from the Indian Ocean, the rainfall is slight, and often long periods of drought occur. There are no rivers; the wadies, or watercourses, are dry for most of the year, and when dry the wells which occur along their courses, and the reservoirs in which the water is stored up, are the only means of supply.

PRODUCTS—The people of the interior are mainly engaged in pastoral pursuits, and sheep, goats, asses, camels, and horses form their chief wealth. The date-palm is the most valuable tree. Agriculture is carried on in the valleys and coast-strips. Among the productions are durrah, a kind of millet, tobacco, excellent fruits, coffee in Yemen, cotton in Oman, and aromatic plants chiefly in the south and west, such as frankincense, myrrh, balsam, gum, &c.

The Arabs are keen traders. Before the arrival of Europeans they monopolised the sea-trade of the Indian Ocean, and their descendants are still found in many parts of the East.

THE KINGDOM OF HEJAZ—The whole of Arabia is now independent of Turkey, and this new kingdom has been established. It embraces all Western Arabia except Aden, and is bounded by the Red Sea, Egypt, and Palestine.

1 **Towns**—The principal towns are the sacred cities of Mecca, the birthplace of Muhammad, and Medina, the place of his burial. Every spring multitudes of pilgrims from all parts of the Muhammadan world visit these towns—some by sea to Jedda, the port of Mecca, others by the great pilgrimage and trade routes from Damascus and Bagdad. The largest town in Yemen is Sana (50), situated in a fertile valley, and the residence of a powerful emir. A railway has been built between Medina and Damascus, connecting with Beirut.

2 **Egyptian**—The Peninsula of Sinai is under Egyptian rule.

3 **British**—The Island of Perim, and the fortified port of Aden, with the surrounding district, belong to Britain. Aden possesses an excellent harbour, and is a place of great commercial importance.

4 **Native**—The Arabs may be divided into the settled population of the towns and villages and the nomad Bedouins of the desert. Each tribe is under a sheikh, and a confederacy of several tribes often acknowledge the supremacy of an emir. The most powerful native States are the Emirates of Oman [capital Maskat (60), the largest town in Arabia], Jebel Shammar, Nejd and Hasa, and the Sultanate of Koweit.

EXAMINATION PAPERS

- A. 1 What is the extent of the Turkish dominions in Asia? Name the four principal portions.
 2 Account for the inland drainage of Asia-Minor. What mountains border the plateau?
 3 Describe the river system of Mesopotamia.
 4 How do the Lebanon Mountains affect the climate of Syria?
- B. 1. Account for the fertility of the western valleys of Asia Minor, the Black Sea coast district and the oasis of Damascus.
 2 Give the situation of the chief ports of Asiatic Turkey, and say what exports would be likely to be sent from them
 3 Name the chief races inhabiting Turkey in Asia and mention the districts which they respectively inhabit
 4. What do you know of the Dead Sea, Lake Van Smyrna, Nineveh, Basra, the Kurds
- C. 1. Describe the surface and the inhabitants of Arabia.
 2 Mention the chief points of interest in a coasting voyage from Suez to Maskat.
 3 What are the chief products of Arabia?
 4. Describe the political divisions of Arabia, and mention the chief towns in each
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IRANIA

GENERAL DESCRIPTION.—Physically, the area between the Indus on the east and the Tigris on the west, and the basins of the Caspian and Aral Seas on the north, and the Arabian Sea on the south, form one geographical region, consisting of an extensive tableland known as Irania, and divided politically into the countries of Persia, Afghanistan, and Baluchistan. The last named has already been dealt with as a part of the Indian Empire.

BOUNDARIES AND AREA.—The plateau is bounded on all sides by its mountainous wall, and has the sea—the Arabian Sea, the Gulf of Oman, and the Persian Gulf—on the south. The Caspian Sea bounds the plateau on the north-west. The area is about a million square miles, of which 628 000 sq. miles belong to Persia and 250 000 sq. miles to Afghanistan.

RELIEF.—The direction of the ranges which border and cross the plateau is from east to west, except on its eastern edge, where the Sulaiman and Hala Mountains run longitudinally.

The northern range is a continuation of the Himalayas, attaining a height of 25,000 ft in the **Hindu Kush** at its eastern end, and of 19,000 ft in the **Elburz Mountains** at its western end.

An extensive depression crosses the plateau from north-west to south-east near the centre. **Sandy deserts**, alternating with **salt marshes (kavirs)**, cover its surface. The northern part of the depression is occupied by the **Great Salt Desert of Khorassan**.

CLIMATE AND RAINFALL.—The plateau of Irania lies a little to the north of the Tropic of Cancer, and, like Arabia and the Sahara, is situated in the vicinity of the belt of low pressure and small rainfall. It is also outside the monsoon region. The climate is therefore exceedingly dry, and this accounts largely for the extremes of heat in the lowland districts and cold in the highlands.

The only part of the plateau which has a really good rainfall is the north-west, where the vegetation is of almost tropical luxuriance. The monsoon winds deflected by the Himalayas penetrate into Afghanistan, and falls of snow in that country are frequent in winter.

DRAINAGE—The relief accounts for the direction of the drainage, and the climate for its meagreness. The rivers are few and scantily supplied with water, and were it not for the melting of the snows on the lofty mountain ranges, a much greater part of the country would be desert. Only a small part of the plateau drains to the ocean, the greater part draining inland into salt lakes or swamps.

1. **Oceanic drainage**—The **Karun**, which joins the **Shat-el-Arab**, is the only navigable river; the **Kabul**, from Afghanistan, joins the **Indus**.

2. **Inland drainage**—The best-watered part of the plateau is Afghanistan. The **Oxus** forms the boundary for some distance on the north. The **Merghab** and the **Heri Rud** drain into **Turkestan**, and the **Helmand** into **Hamun Swamp**. In the north-west the **Sefid Rud** and the **Atrek** drain into the **Caspian Sea**.

IRRIGATION.—The scantiness of the rainfall, and the small number of rivers render irrigation absolutely necessary over a large part of the plateau. The method adopted is similar to that in vogue in **Baluchistan**. Water is carried underground in tunnels called **karezes**, sometimes for considerable distances.

These are tapped at intervals by means of wells, by which the water is brought to the surface. The karezes are usually but a small distance below the surface.

PRODUCTS—What few products are grown are tropical in character—rice, cotton, sugar, &c, on the uplands wheat and barley are grown. Fruits ripen to perfection and are found in great variety. Grapes are cultivated in Persia, the wine of Shiraz being well known. The asafetida plant grows in Afghanistan, the drug being exported.

Sheep, goats, two-humped camels, and horses form the chief wealth of the nomadic tribes of the highland regions.

FIG 84—IRANIA PHYSICAL AND POLITICAL



PERSIA.—People.—The estimated population is about $9\frac{1}{2}$ millions, or about 15 to the square mile. The people are **Muhamadans**, almost entirely of the Shiah sect. The Persians are courteous in manners, and have more cultivated tastes than the majority of Eastern people.

Government—Persia has recently secured representative government, the Shah being the president of a Legislative Assembly.

Means of Communication and Towns.—Railways are practically non-existent, the Karun is the only navigable river, and the roads are few and badly made. Transport is therefore difficult and trade backward.

Teheran (280,000), the capital, is situated towards the south of the Elburz Mountains. Tabriz (200), near Lake Urumia, is the great trading centre of the traffic between Persia and the Black Sea port of Trebizond. Meshed is the principal trading centre in north-east Persia. It is regarded by Shi'ahs as a sacred city. Ispahan, a former capital, is situated in a fertile valley south of Teheran. Farther south is Shiraz, noted for its wine. The trade of the Persian Gulf is increasing. The principal ports are Bandar Abbas, and Bushire.

AFGHANISTAN.—People.—The population is from $4\frac{1}{2}$ to 5 millions, who are nearly all Sunni Muhammadans. The mountainous character of the country has caused the people to be broken up into tribes or clans, who do not always live peaceably together. The Afghans are a brave, warlike people.

GOVERNMENT.—Despotic—under the Amir of Kabul, who is, however, assisted in the government by his relatives and by other officials.

Means of Communication and Towns.—Trade in Afghanistan is carried on by road. Three important towns command the great military and trade routes between India and the West. Kabul (70), the capital, carries on considerable trade with India by the Kharbar and Kurram Passes to Peshawar and Dera Ismail Khan. Kandahar, the chief town in Southern Afghanistan, is now nearly connected with India by the railway which runs through the Bolan Pass. Herat, situated in the fertile valley of the Heri Rud, is the most important town of Western Afghanistan.

EXAMINATION PAPERS

- A. 1. Describe the mountain system of Irania
 2. Show how the mountains affect the climate of Persia
 3. What are the principal articles exported from Persia, and say where they are produced?
 4. How is agriculture carried on? Name the most fertile districts
- B. 1. What are the political divisions of Irania, and how is the government carried on?
 2. Describe the inland drainage of Irania
 3. What are the chief roads between Persia and India?
 4. Give the situation of Bushire, Herat, Kandahar, the Great Salt Desert of Khorassan, Shiraz.

EUROPE

GENERAL DESCRIPTION.—Europe is, with the exception of Australia, the smallest of the great land masses of the globe, but it is exceeded only by Asia in population, and it is first in the civilisation and influence of its inhabitants.

Being situated almost entirely in the temperate zone, and having generally a rainfall sufficient for agriculture, the soil, mostly fertile naturally, has been made very productive by the energy and skill of the people. The abundance of mineral wealth and the inventiveness of Europeans have caused Europe to be the chief workshop of the world, and vast quantities of manufactured goods are exchanged for the productions of other continents. The position of Europe in the heart of the land mass of the Northern Hemisphere, and the irregularity of its coast-line, enable this exchange of commodities to be carried on with ease. The ancestors of the great bulk of the people of Europe came originally from Asia, but various causes have been acting during very many centuries to produce great differences in their appearance, language, and character as compared with those of kindred stock now resident in Asia.

BOUNDARIES —Europe is continuous with Asia on the east and south-east, the Ural River and a line running near the Ural Mountains separating the European and Asiatic provinces of the Russian Empire, and an irregular line between the Caspian and Black Seas, which corresponds for some distance with a tributary of the River Kur, dividing Russia in Europe from Persia and Turkey in Asia south of the Caucasus Mountains.

On the north and west Europe is bounded by the Arctic and Atlantic Oceans, and on the south by the Mediterranean and Black Seas.

COAST-LINE —Europe has a more broken coast-line than any other continent. Great openings running far into the land

wash the shores of several extensive peninsulas, and cause the length of coast to be very great in proportion to the area. All the coasts are broken by river mouths or other openings, but the western projections of the British Isles, France, and Spain, and the whole of the coast of Norway, are remarkable for their very numerous openings. The northern and western coasts are mostly high and rocky, except the stretch of very low coast from the Skaw, in Denmark, to the coast of France. The part of this coast which borders Holland is even below the sea-level. The northern shores of the Mediterranean in Spain and Italy are low, except at the headlands, but the eastern shores in Greece and Turkey are high and bold.

The neighbourhood of the ocean in all Central and Western Europe has had the effect of (a) causing the climate to come under the moderating influence of the sea, being subject to less extremes of temperature than other parts of the Northern Hemisphere in corresponding latitudes; (b) making the inhabitants take the foremost place in navigation, exploration of distant lands, and in commerce.

The coastline of Europe may be studied in connection with the great oceans and seas which wash its shores.

(a) **The Arctic Coast**—The northern coast of Russia is low and marshy—a continuation of the Siberian tundras. The only opening of importance is the **White Sea**, on which stands **Archangel**, a convenient port for the export of the forest products of Russia. Trade can, however, be carried on for only half the year, as the White Sea is frozen over all through the winter.

(b) **The Atlantic Coast**.—Rounding **North Cape**, the most northerly point of the mainland of Europe, the Scandinavian coast is found to be high and rocky, and broken by innumerable fiords, many of which penetrate between high and steep banks far into the land. The largest of these openings is **Trondhjem Fiord**, with **Trondhjem**, an ancient capital of Norway, standing upon it. The broken nature of the coast is also seen in the thousands of islands with which it is fringed, the most important being the **Lofoten Group**, lying within the Arctic Circle. The channels between the islands and the coast are protected from wind and storm, and under the warming influence of the **Gulf Stream Drift**, are never frozen, they consequently provide most

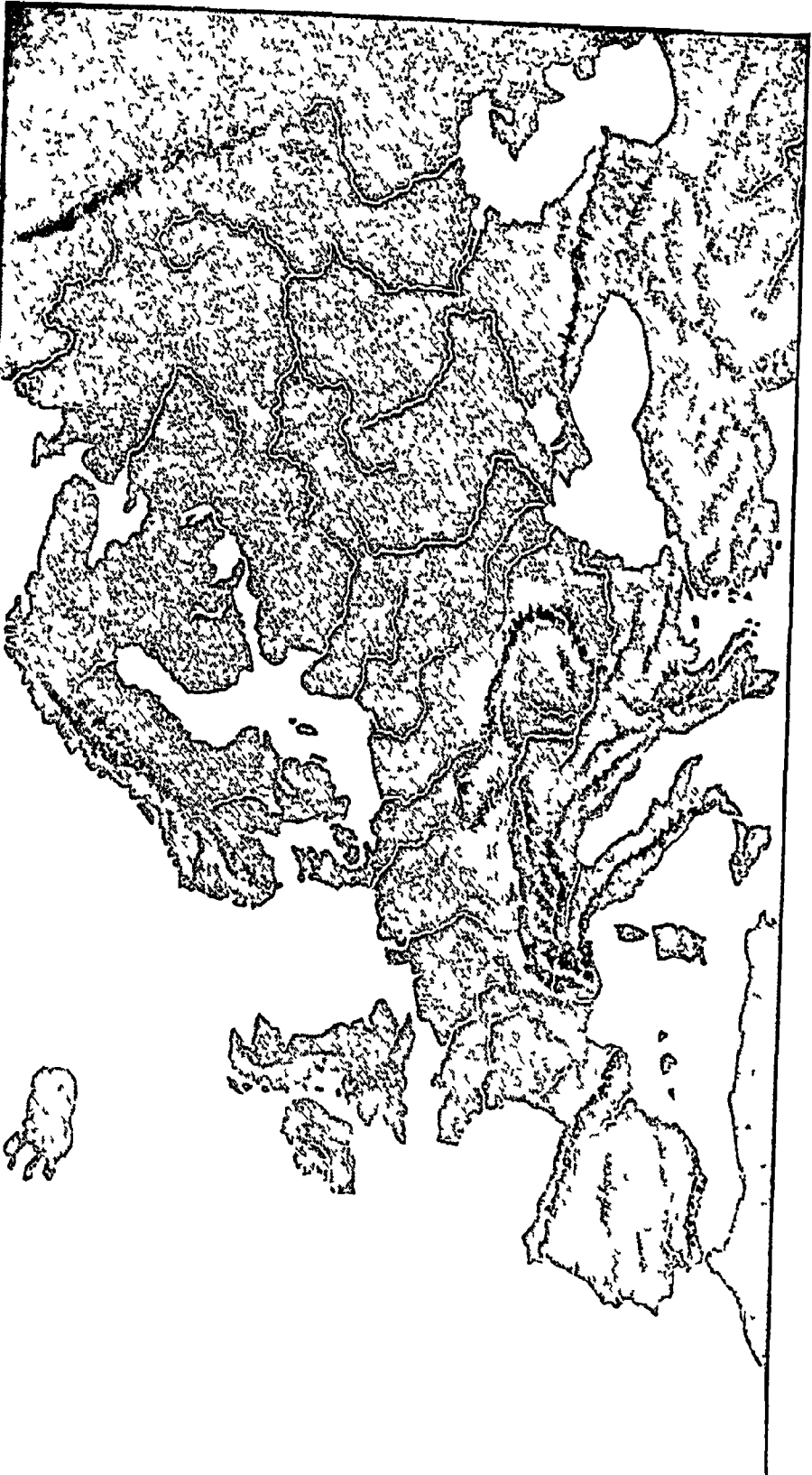
important highways of communication between the different parts of Norway. There are many towns and villages along the coast, but the only ports of importance are **Hammerfest**, the most northerly town in Europe, and **Bergen**, a fishing port. The whole of the Norwegian coast is renowned for its great natural beauty, and it is visited annually by large numbers of tourists.

Near **Bergen** the **North Sea** is entered, which is bounded westwards by the **British Islands**. Except near the coast of Norway, where the mountains shelve steeply into the sea, the **North Sea** is everywhere shallow. It has also numerous banks and is therefore an important fishing ground, giving occupation to thousands of people in the fishing towns and villages of the countries which lie along its shores.

Rounding the **Naze**, the termination southwards of the **Scandinavian Mountains**, and passing through the **Skager Rack**, the **Kattegat**, and the **Sound**, the **Baltic Sea** is reached. The **Baltic** is the great inland sea of Northern Europe. It is shallow like the **North Sea**, it receives the waters of several rivers, and owing to its latitude there is very little evaporation. Its waters are consequently not very salt, and its current constantly flows outwards towards the **Atlantic**. It is practically tideless, and the numerous rivers therefore form deltas at their mouths, and the low shores are fringed with lagoons. The **Baltic Sea** has three great arms, the **Gulfs of Bothnia**, **Finland**, and **Riga**, which are frozen for several weeks every year. The **Gulf of Finland** receives the drainage of the great lake system of Northern **Russia**. Commercially, the **Baltic Sea**, especially at its eastern end, suffers from the severe winter, which causes it to be covered with ice for several weeks. Consequently the ports of **St. Petersburg**, **Riga** and **Danzig** are at a disadvantage compared with those further west. **Stettin** is the port of **Berlin**, and **Kiel** is connected by canal with the **North Sea**. The maritime capitals of **Norway** and **Denmark**, **Christiania** and **Copenhagen**, stand on the straits between the two peninsulas.

The coast of Europe continues low from **Denmark** to the head of the **Bay of Biscay**, except in the north-west of **France**, where there are chalk cliffs similar to those of **Great Britain** on the other side of the **English Channel**. In **Holland**, the shores are actually below sea-level, and dykes have been constructed to

FIG. 80 — RELIEF MAP OF EUROPE.



keep out the sea. The Zuyder Zee is an example of the encroachment of the sea, a long chain of islands still showing the position of the former coastline. The north-west of France consists of two bends with three promontories—Cape Gris Nez at the point nearest England, Cape de la Hague, and Cape Ushant. In the second bend lie the Channel Islands, belonging to Great Britain, a favourite resort of those seeking a mild climate. The coast of Brittany is rocky, with many indentations, but further south it is low and sandy. Here strong currents have deposited immense quantities of sand, which has been built by the tides and winds into a long line of sand dunes. The sand has also drifted inland and covered parts of the flat country immediately behind. This district is known as the *Landes*.

The Atlantic shores of Spain are generally mountainous and bold, the mountain ranges which cross the peninsula terminating in Capes Ortegal, Finisterre, Roca (the most westerly point), St. Vincent and Trafalgar.

(c) *The Mediterranean Shores.*—The Mediterranean is the largest and most important inland sea in the world. The great civilisations of Egypt, Phœnicia, Greece and Rome sprang up round its shores, and the command of the Mediterranean Sea has had a large influence on European history. It has always been a great highway of trade, and since the opening of the Suez Canal the commerce between the East and Europe has also passed along this route, increasing the importance of such seaports as Marseilles, Genoa, and Trieste.

The Mediterranean Sea is divided into two distinct parts by the island of Sicily, and a submarine ridge, of which an elevated portion rises above sea level in the islands of Malta, Gozo, and Comino, and which connects with the Atlas Mountains of Northern Africa in Cape Blanco.

The western Mediterranean is entered from the Atlantic Ocean by the Strait of Gibraltar, flanked on the European side by the rock fortress, which has belonged to Great Britain for over 200 years, and which is one of the most important strategical positions in the world. From Gibraltar to Sicily the Mediterranean Sea has a mountainous background, sloping down to narrow coast plains. Here and there the mountains come down abruptly to the sea, ending in promontories. Two bends occur

in the north—the Gulf of Lions, renowned for its storms, and the Gulf of Genoa, sheltered by the Alps from the north winds, and possessing a delightful climate. This coast is known as the Riviera. Important islands lie in the western Mediterranean—the Balearic Islands belonging to Spain, Corsica to France, and Sardinia to Italy. The two latter are separated by the Strait of Bonifacio.

The eastern Mediterranean is reached either by the open sea between the coasts of Sicily and Africa, or by the Strait of Messina between Italy and Sicily. This sea has two great arms—the Adriatic Sea, forming a depression between the Apennines and the Dinaric Alps, and the Ægean Sea between the highlands of Greece and Asia Minor. The western shores of the Adriatic are remarkably unbroken, but the Austrian coast has many inlets and islands. The chief ports are Brindisi (which rose into importance as the European terminus of the overland route to India), Venice (formerly a great trade mart and distributing centre for the productions of the Levant), and Trieste, the chief port of Austria.

The coast of the Balkan peninsula is much indented—the longest opening—the Gulf of Corinth—almost converting the peninsula of Morea into an island. The Ionian Sea on the west and the Ægean Sea on the east are studded with islands—those in the Ægean Sea being known as the Archipelago.

Three inland seas complete the coast of Europe on the south. Passing through the Dardanelles, the Sea of Marmora is entered, which again connects with the Black Sea by the Bosphorus. Both these straits are important as commanding the direct trade route for the whole of Southern Russia, so they are strongly fortified. The Sea of Azof is connected with the Black Sea by the Strait of Kertch and bounded westward by the Crimea Peninsula. The farther we get from the Mediterranean the less temperate becomes the climate, and Odessa, the chief port in the south of Russia, is frozen for a part of the winter.

All the seas on the south of Europe are, like the Baltic, tideless, and many of the rivers form deltas at their mouths.

RELIEF—Europe is, correctly speaking, not a separate continent, but is the extension westward of the great land mass of which Asia is the main portion, and to which it is very similar

in physical structure The greatest width of the actual unbroken land surface of Europe is at the junction with Asia, and the continent gradually narrows towards the west until it ends in the Spanish Peninsula.

The land surface falls into three natural divisions —

(a) The **Great Plain**—an extension westward of the Great Northern Plain of Asia—embracing all Russia, and extending through Northern Germany to France.

(b) The **Mountain System** of the centre and south—a continuation of the highland system of Asia—extending from the Black Sea to the Atlantic Ocean

(c) The mountainous edge of the continent on the north, which comprises Scandinavia and the Highlands of Scotland.

The Great European Plain includes more than half the surface of Europe, and is remarkably level. In Russia it has a very gentle slope to all the bordering seas, and the Russian rivers radiate from the central portion; but in Germany and France the slope is to the north-west, and hence the rivers of those countries have a general direction to the north-west.

MOUNTAINS.—As in Asia, the mountain system extends from east to west. The Alps form the centre of the system, and, like the Himalayas, they are not a single chain but a series of ranges, varying in length from 450 to 800 miles, and in width from 30 to 150 miles. From the eastern end of the Alps, the **Dinaric Alps** skirt the Adriatic Sea into Turkey, where they turn eastwards as the **Balkans**. From this range spurs extend east and south over the Balkan Peninsula, the chief being the **Rhodope Mountains**, which run towards the Bosphorus, and the **Pindus Range**, which goes south into Greece. Another spur runs northward to the Iron Gate of the Danube, which is continued beyond the river as the **Transylvanian Alps**, and the **Carpathian Mountains**, which sweep round in a great curve, encircling the Plain of Hungary, and bounding the **Wallachian Plain** on the north. The Carpathians connect again with the Alps by the **Sudetes Mountains** and the **Plateaux of Bohemia and Bavaria**.

The western end of the Alps is continued northwards as the **Jura and Vosges Mountains**, and the **Highlands of South Germany**. They also sweep round to the south as the **Apennine**

Range, which encloses the Plain of Lombardy in the north of Italy (cf. the Indo-Gangetic Plain of North India), and traverses the whole length of Italy and Sicily. This range has two active volcanoes—Vesuvius, near Naples, and Etna, in Sicily.

In France, the deeply-cut valley of the Rhone divides the French Highlands from the Alps, but the northern portion of the Highlands—the Plateau of Langres—connects with the Vosges Mountains, and thus with the main system. The Cevennes Mountains in the south of France meet the lower slopes of the Pyrenees, which form the northern wall of the Iberian Plateau.

THE MOUNTAINS OF NORTHERN EUROPE.—The main ridge runs near the Atlantic coast of the Scandinavian peninsula, and is the highest part of a plateau, which presents a steep front to the Atlantic Ocean, and slopes gradually towards the east. The Baltic shores of Scandinavia are low and are really a part of the Great Plain. The northern rim of mountains appears again in the Highlands of Great Britain and Brittany.

The mountainous island of Iceland, just outside the Arctic Circle, is volcanic in origin. The highest peak, Hekla, is still active.

COMPARISON OF EUROPE WITH ASIA.—We thus see several points of comparison between Europe and Asia.

1 Both continents have an extensive plain stretching across the north.

2 In both the main mountain systems are in the south, and the ranges run in a general direction from east to west.

3 The systems of both continents radiate from a central mass—the Himalayas in Asia, and the Alps in Europe.

4 This central mass lies to the north of the middle one of three peninsulas which stretch southwards.

5 The western peninsula in each case is a plateau, the middle one has an island to the south, and the western one has an archipelago lying off its shores.

6 An island kingdom, Great Britain, lies to the west of Europe, and another, Japan, to the east of Asia.

7. The climate of these kingdoms is moderated by a warm ocean current—the Gulf Stream in the case of Great Britain, and the Kuro Siwa in the case of Japan.

RIVERS—The main water-parting in Europe starts at the French Highlands and has a general direction to the north-east as far as the Ural Mountains, maintaining a fairly equal distance from the north coast nearly all the way. The position of this watershed can be clearly seen from the relief map of Europe on page 237. From this water-parting the general direction of the rivers is north and south, the principal exceptions being the Danube and the Po, which flow in an easterly direction.

Besides the rivers of the mainland mass there are the peninsular rivers of the Scandinavian, Iberian, Italian, and Balkan peninsulas, each system with its own watershed.

The rivers from the main European watershed may be considered according to the seas into which they flow.

1 **Into the Arctic Ocean.**—The Petchora and the Dwina (with Archangel at its mouth) are commercially unimportant, flowing through desolate territory and being icebound for months together.

2. **Into the Baltic Sea**—The Neva, with St. Petersburg at its mouth, drains the great Russian lakes, and falls into the Gulf of Finland. The Western Dwina rises in the Valdai Hills and flows into the Gulf of Riga. The port of Riga at its mouth suffers from the shallowness of the river.

The Vistula and the Oder rise near together in the Carpathian Mountains. Danzig is the port of the former, Stettin of the latter

3 **Into the North Sea**—The Elbe (690 miles) rises south of the Sudetes Mountains and divides Germany into two nearly equal parts. Hamburg is at the mouth. The Weser flows entirely in Germany. Bremen is its port. The Rhine (760 miles) drains a great part of Switzerland, flows through Western Germany, and empties itself through a delta which includes a large part of Holland. Its port is Rotterdam. The Maas and the Scheldt flow into the same delta as the Rhine

4 **Into the English Channel.**—The Seine rises in the Plateau of Langres, and flows north-west past Paris. The port at its mouth is Havre

5. **Into the Bay of Biscay.**—The Loire and the Garonne rise in the French Highlands. The ports of the former are Nantes and St Nazaire, of the latter Bordeaux

6. Into the Mediterranean Sea —The chief rivers draining from the main watershed are the **Rhone**, which rises in the south of Switzerland, and the **Po**, draining the Plain of Lombardy. Both these rivers form deltas.

7 Into the Black Sea —The **Danube** (1,700 miles) the second longest river in Europe, rises in the Black Forest, and is very important, politically and commercially. It forms a natural boundary for a considerable portion of its course, and is navigable to within a short distance of its source. It forms a large delta at its mouth. The **Dniester** (700 miles) and **Dnieper** (1,200 miles) drain south-western Russia.

8 Into the Sea of Azof.—The **Don** (1,100 miles) drains a dry region, has few feeders, and is consequently shallow.

9 Into the Caspian Sea —The **Volga** (2,200 miles) is the longest river of Europe. It rises in the **Valdai Hills**, has many tributaries, and empties itself through low-lying land by a large delta. Its port is **Astrakhan**.

PENINSULAR RIVERS —1. **Scandinavian.**—The position of the watershed renders all the streams flowing into the Atlantic short and swift. Flowing towards the Baltic Sea are the **Tornea**, the boundary between Sweden and Russia, and the **Dal**. The **Gota**, with **Gothenburg** at the mouth, and the **Glommen** (400 miles), the longest river in Norway, fall into the **Kattegat**.

2 Iberian —The watershed on the plateau is nearer the east than the west coast. The rivers falling into the Atlantic Ocean flow in nearly parallel valleys between mountain ranges (cf. **Burma**). The chief are the **Douro**, with **Oporto** at the mouth, the **Tagus**, with the port of **Lisbon**, the **Guadiana** and the **Guadalquivir**. Flowing into the Mediterranean Sea is the **Ebro**. The rivers of this peninsula suffer from the dryness of the climate, they are navigable for only a short distance from their mouths, and lying in deep channels, they cannot easily be connected by canals.

3 Italian —The watershed lies nearer the eastern than the western coast. The only rivers of note, therefore, flow to the west. The **Arno** is only 150 miles long, and the **Tiber**, with **Rome** on its banks, only 210 miles in length.

4. Balkan —This peninsula is so mountainous that its rivers are short, and the currents generally rapid. The **Maritza**, which

FIG. 86 — PHYS. MAP OF EUROPE

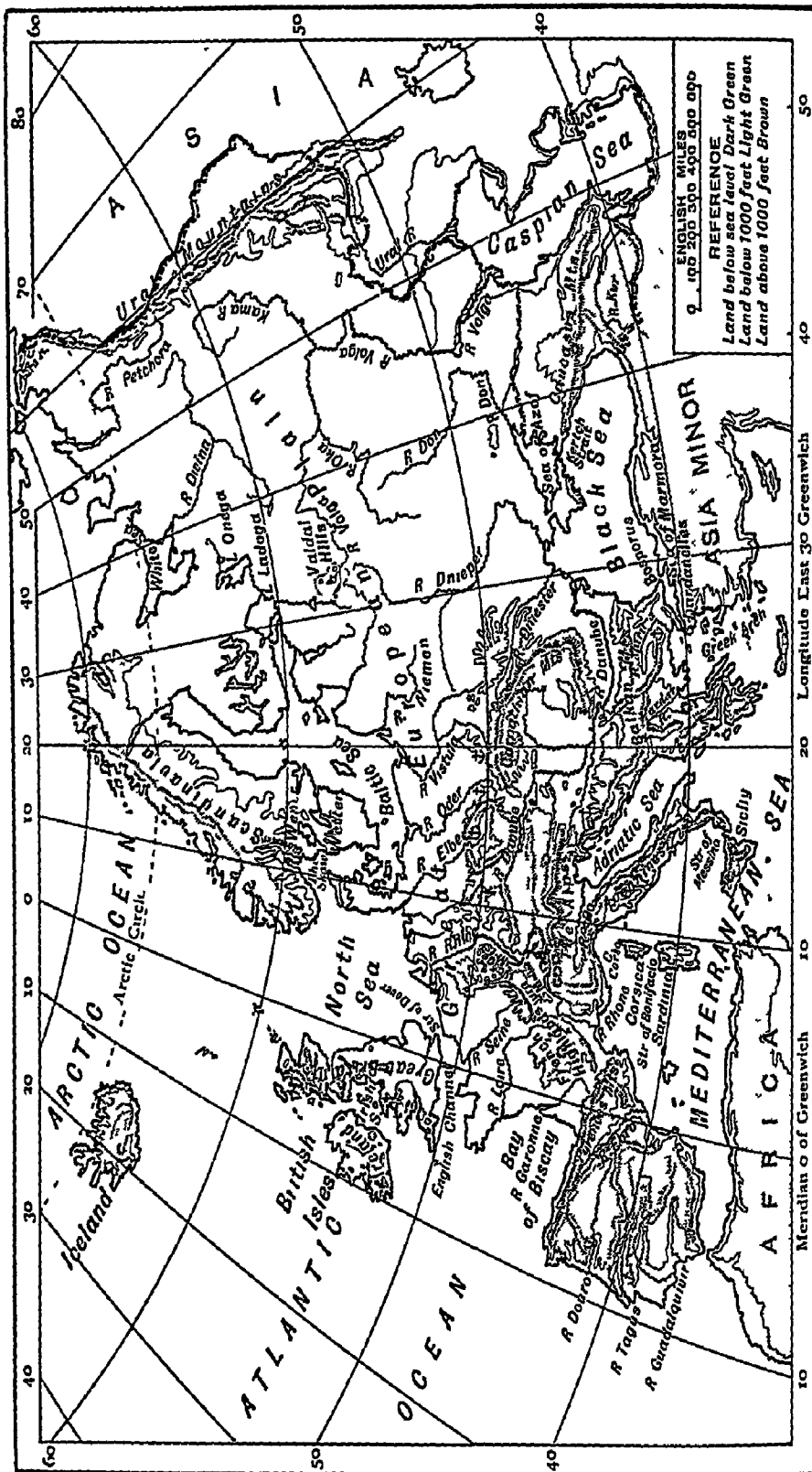
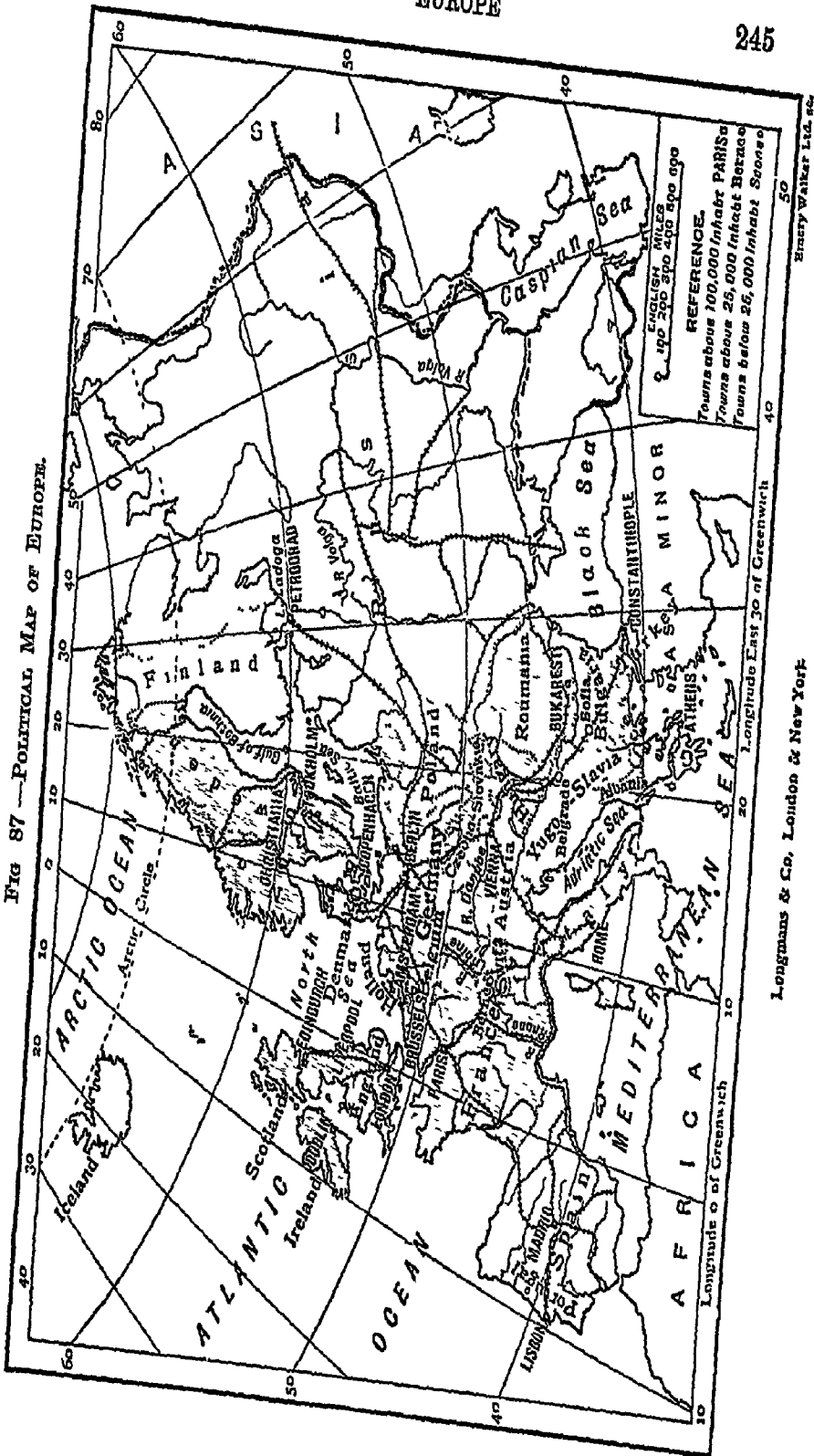


FIG 87 — POLITICAL MAP OF EUROPE.



Longmans & Co, London & New York

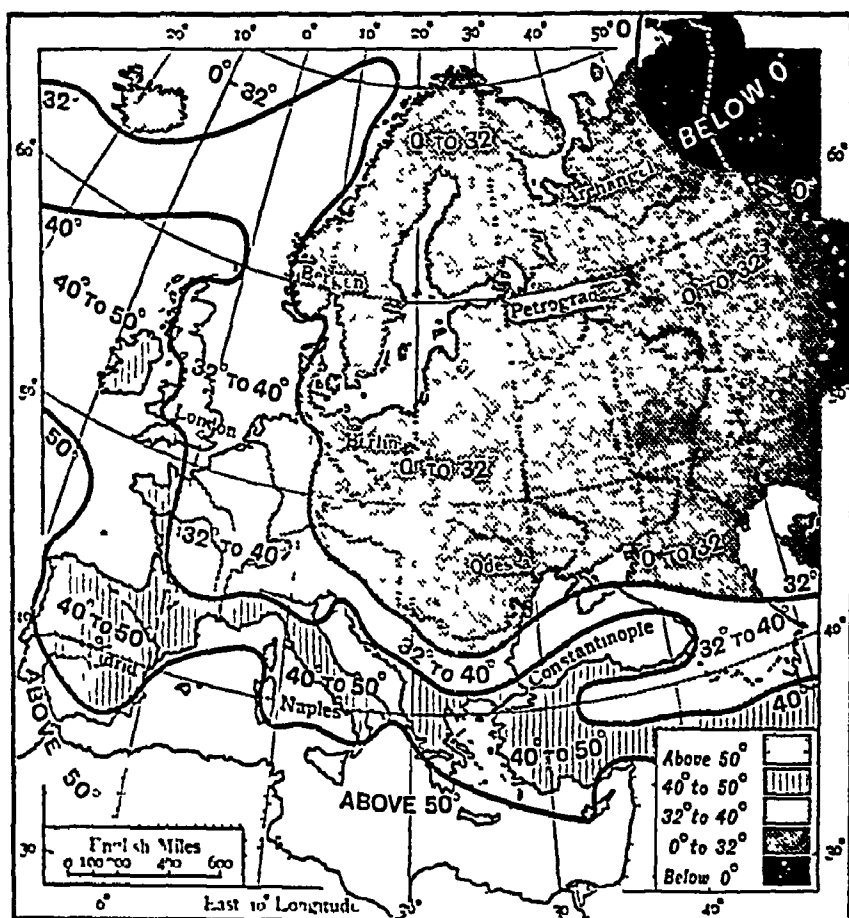
Emery Walker Ltd. & Co.

drains the plain to the north-west of the Sea of Marmora, is the longest.

LAKES.—The chief European lakes lie—(a) In the countries adjacent to the Baltic. In Russia.—Lake Ladoga, the largest in Europe, and Onega In Sweden.—Lakes Wener and Wetter.

These are all of much greater size than those in other parts of Europe

FIG 87a —EUROPE JANUARY ISOTHERMS



NOTE —In studying isotherm maps it must be noted that the temperature of any place approximates to that of the isotherm to which it is nearest

(b) In the Alpine Mountain System.—These are of entirely different character from the former, for while the Russian and Swedish lakes lie on low plateaux with no mountains near them, the Alpine lakes occupy deep hollows amongst the mountains, and are of great beauty. Some of the chief are Geneva, Lucerne, Zurich, and Maggiore.

Lakes of lesser importance are scattered in most of the European countries, but France and Spain are very destitute of lakes

The Caspian Sea, though bordering upon Europe, can hardly be called a European lake

CLIMATE—With the exception of a very small area in the north, Europe lies entirely within the temperate zone, but although the climate of the continent may be generally described

FIG 87b—EUROPE. JULY ISOTHERMS



as temperate, latitude is not, by any means, the most important factor determining the prevailing conditions. Temperature varies, of course, from south to north, but the variations are more remarkable from west to east, places on widely different latitudes often having the same mean annual temperature. For example, the south of Iceland and the coast of Norway have the same winter temperature as Odessa on the Black Sea twenty degrees further south, and the January isotherm passing along

the west of the British Isles also passes through Constantinople fifteen degrees further south. On the other hand the summer temperatures of Eastern Europe are high, *e.g.* the July isotherm passing through the centre of Ireland and Great Britain is inside the Arctic Circle in the north of Scandinavia, and only a few degrees outside of it in Northern Russia. These facts lead to the conclusion that in Western Europe extremes of temperature are

FIG 87c—EUROPE ANNUAL RAINFALL



unknown, while in the east of the continent the winters are long and severe, and the summers short and hot.

Various causes combine to produce these results. (a) **Proximity to the sea** is a very important factor in equalising climate, and not only is the west of the continent nearer to the sea, but here Europe is narrowest, and the interior is not removed from its influence. (b) The **prevailing winds** in the west are south-west winds from the Atlantic Ocean, and not only are they

generally warm, but they also bring rain, another moderating agent. (c) Then, too, the Atlantic shores of Europe are washed by the **Gulf Stream Drift**, whose waters are much warmer than the surrounding ocean. (d) The rainfall also tends to the same climatic result. The highest portions of the continent receive the most rain, and these are situated chiefly in the south and west. The rainfall is lowest over the eastern half of the Great Plain, resulting in extremes of climate. An exception occurs in the interior of the Iberian Peninsula, where the mountainous wall of the plateau deprives the winds of their moisture before penetrating inland, but where the climate is not extreme owing to the proximity of the sea on all sides.

To sum up, Western Europe has mild winters and summers, and Eastern Europe has very cold winters when rivers and seas are frozen over, and short hot summers when vegetation flourishes.

The lands bordering the Mediterranean Sea have a genial climate, summers and winters being alike mild. Most of the rain in this region falls during the winter, the moist south-west winds condensing when they reach the land, which is cooler than the latitudes from which they blow.

Europe can therefore be divided into three climatic regions.

1. Western Europe, with a temperate climate and sufficient rainfall.
2. Eastern Europe, with a more extreme climate and smaller rainfall.
3. The Mediterranean region, with a mild climate and good rainfall.

PRACTICAL EXERCISES

1. Draw a line from London to the Nile Delta. What countries or seas will it pass through, and what is the January temperature of each?
2. Explain why the winter temperature of Berlin is so much lower than that of Dublin.
3. Draw a line from Archangel to the Strait of Gibraltar, and give reasons for the variations of winter climate in the countries through which it passes.
4. What is roughly the difference in latitude between Ireland and Greece, and explain the physical conditions that cause the winter temperature to be so similar in these two countries.
5. What is the chief cause of the similarity between summer heat at Archangel and London, though the latter is so much farther south?

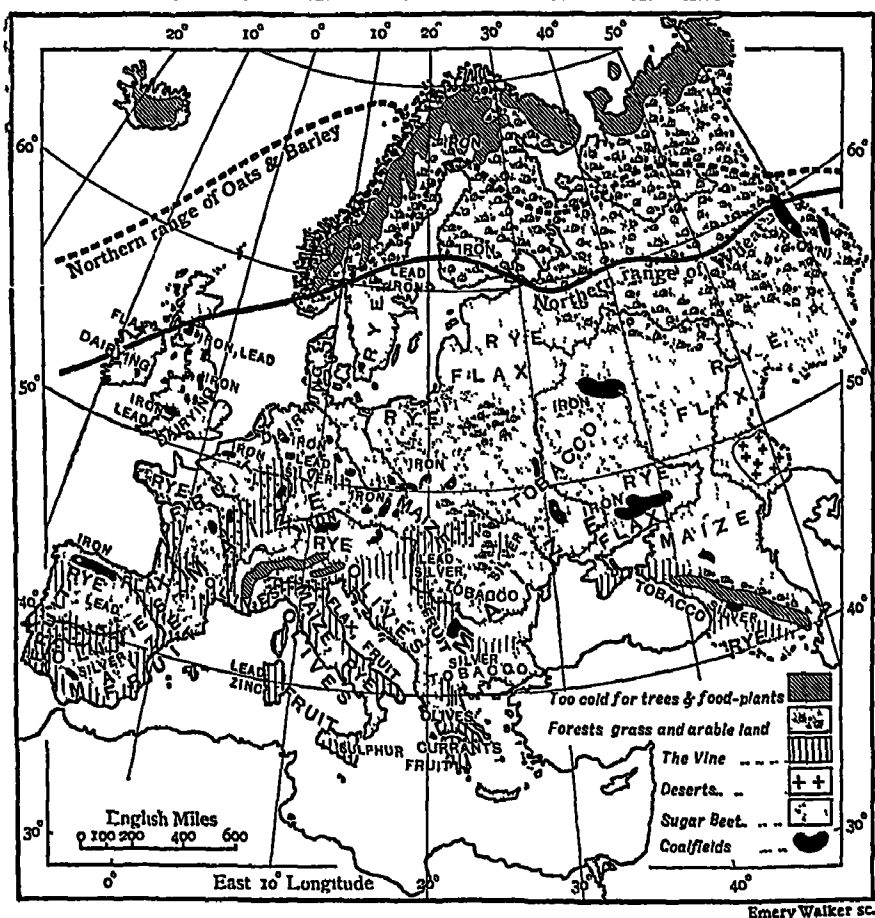
6 What are the causes of the great summer heat in Central Italy and the plateau in the south-east of Spain ?

7 What is the cause of the small rainfall over eastern Russia ?

8 Explain the heavy rainfall of N-W Spain, the western side of the British Islands, and the south of Norway

VEGETATION.—Although in Europe civilisation and scientific methods have brought agriculture to a high degree of perfection, and have rendered the distribution of cultivated plants

FIG 87d—EUROPE VEGETATION AND MINERALS



more general than in other continents, distinct belts of vegetation may nevertheless be traced.

1. The tundras of Northern Russia are a continuation of those of Siberia.

2. The forest belt of the north temperate region which stretches from Scandinavia across Russia. The trees consist mainly of pines and firs and they give rise to important industries. such as felling and lumbering ; the preparation of

wood products, *e.g.* resin, pitch, turpentine, &c , the manufacture of wooden articles, doors, &c and matches; the reduction of timber unfit for other purposes to pulp for making paper. The most important grain crops of this belt are barley, oats and rye.

3. The belt of arable and pasture land extending from France, through Belgium, Holland, Germany and Russia to the Urals. The chief crops are wheat, beet, and the vine in the west, and rye, oats, flax, and hemp further east. France is the largest wheat-growing country of Europe. Forests of deciduous trees such as oak, beech, elm and ash occur in various parts, especially on the higher lands.

4. The steppe lands of south-eastern Russia have a short hot summer and a severe winter, and get very little rain. They are a continuation of the steppes of south-west Asia. Trees cannot grow, but good pasture springs up in the summer and supports large numbers of domestic animals, the chief wealth of the people.

5. The Mediterranean Region is the land of fruits. Olives, oranges, grapes, figs, and other fruits grow in abundance, and in the south of the peninsulas semi-tropical plants such as maize, cotton, rice, and tobacco flourish. The characteristic trees of this region are evergreen. An important tree product is cork, obtained from the bark of an evergreen oak.

Animals.—The common domestic animals are horses, cattle, sheep, and pigs, and mules and asses in the south. Wild animals are numerous in many parts, but Europe is free from the large animals of the cat-tribe, and from large and dangerous reptiles. Snakes exist in various parts, but are not so numerous or dangerous as those of tropical climates. The largest wild animals are the bear, wolf, boar, and deer.

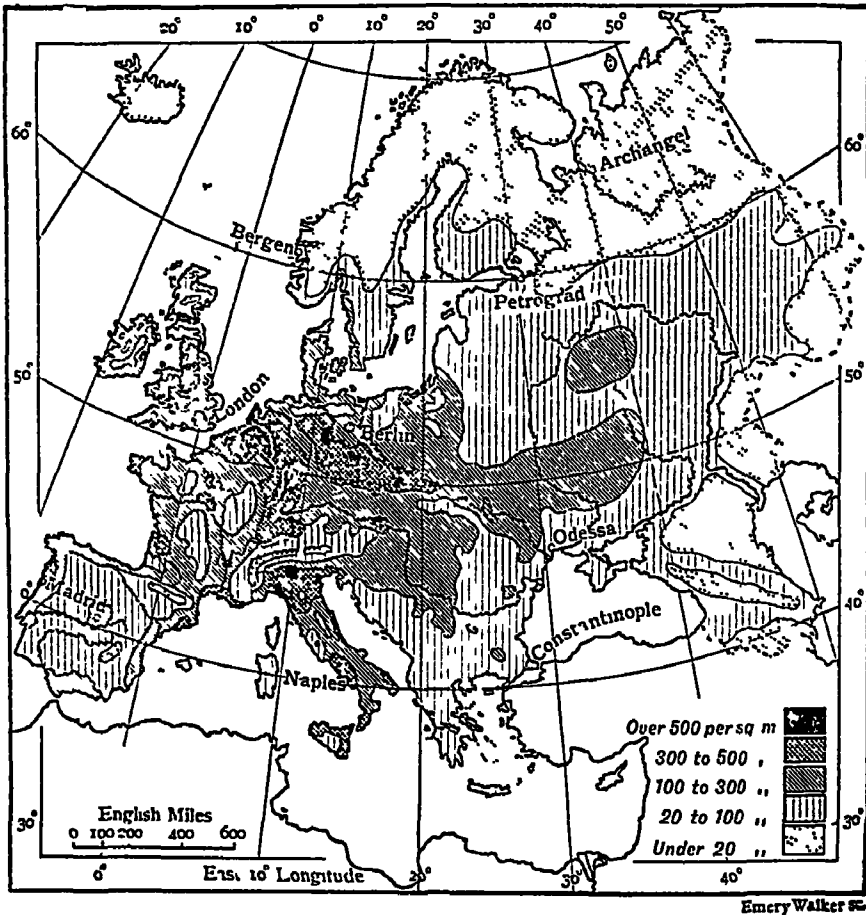
Minerals.—Europe is rich in coal, iron, copper, lead, salt, marble and building stone, and many other minerals. The countries richest in mineral wealth are the British Isles, Germany, and Austria.

PRACTICAL EXERCISES

- 1 Why is Western Europe so much more thickly peopled than the east?
- 2 What products are grown in South-Eastern Europe that can be exchanged for the manufactured products of the United Kingdom?

- 3 Compare the products of Northern and Southern Europe
- 4 Why can wheat be grown farther north in Russia than in Great Britain?
- 5 What countries produce sugar beet?
- 6 In what countries is iron found? (See map on page 250)

FIG 87e—EUROPE DENSITY OF POPULATION



PEOPLE.—The chief races of people are the Teutons in the British Isles, Germany, Scandinavia, Denmark, Holland, and parts of Austria, Celts in France, parts of the British Isles, and Spain, Slavs in Russia, and the States lying north and south of the lower course of the Danube. All these races are branches of the great Aryan family.

The most numerous non-Aryan people are the Magyars in Hungary and the Turks. The total population of Europe is about 400 millions.

The population is much denser in the more genial climate and in the great industrial centres of the west than in the extremest climate of Russia.

THE COUNTRIES OF EUROPE WITH THEIR CAPITALS

England	London	Norway	Christiania
Scotland	Edinburgh	Denmark	Copenhagen
Ireland	Dublin	Spain	Madrid
France	Paris	Portugal	Lisbon
Holland	The Hague	Italy	Rome
Belgium	Brussels	European Turkey	Constantinople
Germany	Berlin	Greece	Athens
Switzerland	Berne	Bulgaria	Sofia
Austria	Vienna	Jugo Slavia	Zagreb (Agram)
Hungary	Buda-Pesth	Czecho Slovakia	Prague
Russia	Petrograd	Poland	Warsaw
Roumania	Bukarest	Serbia	Belgrade
Sweden	Stockholm		

EXAMINATION PAPERS

- A 1 Name the great natural divisions of the surface of Europe, and describe the Great Plain
- 2 Name the chief rivers of Europe, arranging them in groups according to the watersheds.
- 3 State the varieties of vegetation that would be met with in traversing Europe from the Mediterranean Sea to the Arctic Ocean
- 4 Describe a coasting voyage from the mouth of the Oder to the Don, stating exactly the seas, parts of the sea, and straits passed through on the way
- B 1 Describe the climate of Europe, and state any reasons for peculiarities
- 2 Compare the Mediterranean and Baltic Seas
- 3 Name and indicate the position of the chief mountain ranges connected with the Alpine system
- 4 State any reasons why the people of Europe take a foremost place in the commerce of the world.

THE BRITISH ISLES

GENERAL DESCRIPTION.—The British Isles form a large group of islands, extending along the west coast of Europe. They are separated from the mainland and from each other by shallow seas. Were the sea-bed to be raised 600 ft, the submerged banks from which the islands rise would become dry land, and would form a great westerly extension of Europe, as in fig. 88.

FIG 88 —EFFECT OF SEA-BED BEING RAISED 600 FEET.



The people inhabiting these islands have by their discoveries and conquests built up the largest empire the world has ever seen, the British Empire occupying an area of more than 11 million sq miles—that is, as large as the whole continent of Africa—and containing a population of nearly 400 millions, or more than one-fourth of the whole human race. They are the greatest maritime and commercial nation in the world, British vessels not only carrying goods for their own trade, but for other nations also.

CAUSES OF THE GREATNESS OF THE BRITISH EMPIRE.—Various reasons have contributed towards the de-

velopment and formation of this vast empire, among the chief of which are —

1 CLIMATE.—The islands lie entirely within the Temperate Zone, and are thus suited for the home of an energetic and enterprising race. The summer heat is not so great that open-air work in the middle of the day is impossible, nor is the cold severe enough to prevent outdoor labour in winter. If we compare the temperature of the British Isles with that of other countries in the same latitude the difference is very striking. In Labrador the coasts are icebound for the greater part of the year, and it is with difficulty that human life can be sustained; while in Britain corn and fruits grow well and ripen, and the harbours are free from ice throughout the year. Again, in Eastern Russia the difference in temperature between summer and winter is 60°, the rivers are frozen over, and outdoor labour is suspended for several months.

This mildness and evenness of the British climate is largely due to the prevalence of south-westerly winds, and the warm waters of the Gulf Stream.

2 RELIEF OF THE LAND—On looking at the map it will be noticed that in Great Britain the lowlands are chiefly on the east, and that the land gradually rises towards the west. The rivers of England flowing into the North Sea are, therefore, slow, navigable, and well suited for commerce. By far the greater portion of England and Ireland is under 500 ft. in elevation.

3 FERTILITY OF THE SOIL—The lowland districts are, on the whole, covered with a good depth of fertile soil, while a great deal of the hilly ground affords good pasturage for sheep.

4 GEOLOGICAL FORMATION—In the British Isles nearly all kinds of rocks crop up to the surface, and, as different rocks contain different minerals, Great Britain is especially rich in mineral products. Coal, iron, lead, tin, zinc, copper, stone, and salt are all found in abundance, and, as in many cases beds of coal, iron, and limestone are found lying near each other, these districts are particularly suited for industrial occupations.

5 THE EXTENT AND INDENTED CHARACTER OF THE COAST-LINE—The coast-line of Great Britain and Ireland exceeds 6,000 miles. This great length of coast is broken up by numerous inlets, so that no part of the country is far from the sea. These commercial facilities are still further increased by the number of excellent harbours and the high tides of the coast, by which vessels can be carried to ports far inland.

6 SITUATION—The British Isles are situated near the centre of the land hemisphere, so that they are within reach of all the great markets of the world both for imports and exports. The sea trade between the principal commercial nations of Europe and the rest of the world must pass by our shores, hence many products are sent to London and other British ports to be again reshipped to other countries.

The insular position of the British Isles, in addition to facilitating

its beautiful lakes is to the west of this chain and the Cambrian System overruns Wales.

Ireland consists of a large central plain, surrounded by hills which are highest in the north—**Donegal Mountains**: east—**Wicklow Mountains**: and south—**Kerry Mountains**. The highest mountain in the British Islands—**Ben Nevis** in the **Grampians**—is only 4,400 ft. high.

RIVERS.—As the highest land lies generally in the west, nearly all the rivers flow to the east. The principal exceptions are the **Severn** in Wales, the **Mersey** in England, the **Clyde** in Scotland, and the **Shannon** (the longest river in the British Isles—224 miles) in Ireland.

In size the rivers of Great Britain are comparatively small and insignificant, but commercially they are of very great importance. Many of them are navigable at their mouths for the largest ocean-going steamers, and consequently almost every river has its port. Commencing on the north of Great Britain, the chief rivers and river-ports in Scotland are the **Dee** with **Aberdeen**, the **Tay** with **Dundee**: the **Forth** with **Leith** the port of **Edinburgh**.

In England the rivers are longer and the ports more important. The chief are the **Tyne** with **Newcastle** and **Tynemouth**, great coal-ports; the **Tees** with **Middlesbrough**: the **Humber**, the estuary of the **Ouse** and **Trent**, with **Hull**: and the **Thames** (215 miles) with **London** and **Tilbury**.

On the west of Great Britain are the **Clyde** with **Glasgow**; the **Mersey** with **Liverpool** and **Birkenhead**: and the **Severn** (220 miles) with **Bristol** and **Cardiff**.

The **Shannon**, not commercially important, is the longest river in the British Isles and the only Irish river worthy of note.

LAKES.—The lakes of the British Isles are renowned for their beauty, those of England and Scotland especially, being visited by thousands of tourists every year.

The English 'Lake District' is in Cumberland, the lakes lying among the hills of the Cumbrian Group. The occurrence of lakes here is due to the irregularity of the mountains, and the heaviness of the rainfall. The largest lake is **Windermere** (10 miles long).

The lakes of Scotland occupy the valleys of the Northern

Highlands and the Grampians. The largest—Loch Lomond, 24 miles long and 7 miles in greatest width—is also the largest lake in the British Islands.

The lakes of Ireland are situated chiefly in the northern half of the island. Lough Neagh, in the north-east, is the largest. Many of the Irish and Scotch lakes are expansions of the river channels.

CLIMATE.—The British Islands (1) lie in the Temperate Zone, between the parallels of 50° and 60° N, (2) are surrounded by the ocean, (3) are washed by the warm Gulf Stream Drift, (4) are visited by westerly and south-westerly winds, (5) have higher land in the west than in the east, and (6) are near the Continent of Europe. The character of the climate can be deduced from these facts.

Probably no other country in the same latitude has so moderate a climate, and (2), (3), and (4) above account for this. The proximity of the ocean renders the climate equable, the influence of the Gulf Stream is to raise the temperature, and the moisture brought by the prevailing winds from the Atlantic assists in producing both these effects, as well as to bring plentiful rain. The climate of the British Isles may therefore be described as temperate and moist.

RAINFALL—The west winds are condensed on the high land to the west of the islands, and hence the Atlantic coasts are much wetter than the eastern. Moreover, the dry and cold east wind which occasionally blows from the Continent tends to keep the east drier than the west.

FERTILITY OF THE SOIL—Only a very small proportion of the land of the British Isles is unfit for cultivation (mountains, moors, rivers, and lakes). The soil is naturally fertile, and has been improved by artificial manuring and good farming. The yield of wheat per acre is greater in England than in any other European country.

PRACTICAL EXERCISES on Map on p 260

1 What parts of the British Isles receive the heaviest rainfall, and why?

2 Why is the western side of the Pennines wetter than the eastern?

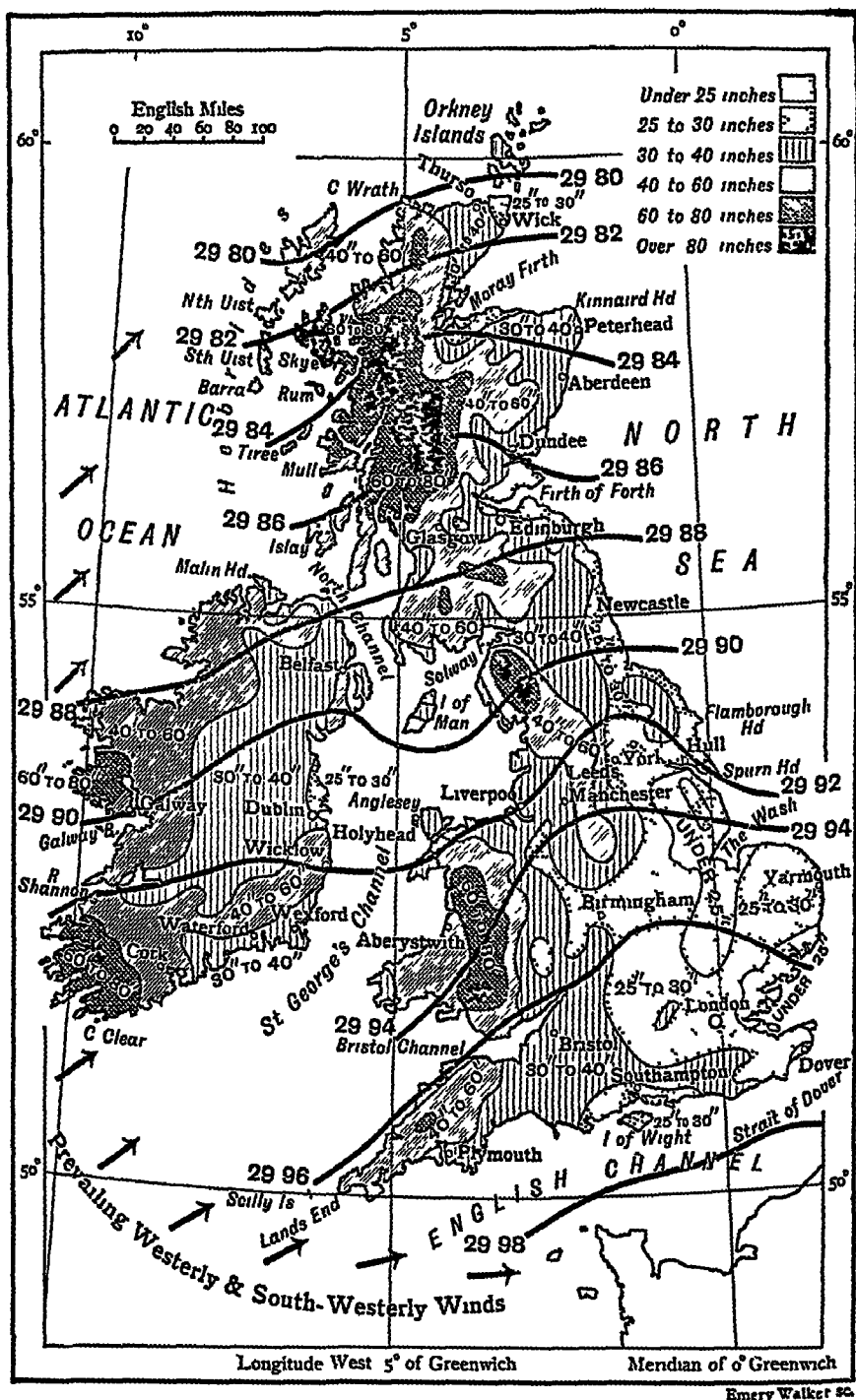
3 What differences as regards rainfall and temperature are there to be seen when comparing Galway with London?

4 How do you account for the small rainfall in the district near the Wash?

5 What parts of the British Islands are most suitable for dairying, and why?

6 Wheat requires a fairly dry as well as a warm climate. In what parts of the British Islands would you expect to find wheat crops?

FIG 89a—BRITISH ISLANDS ANNUAL RAINFALL AND ISOBARS

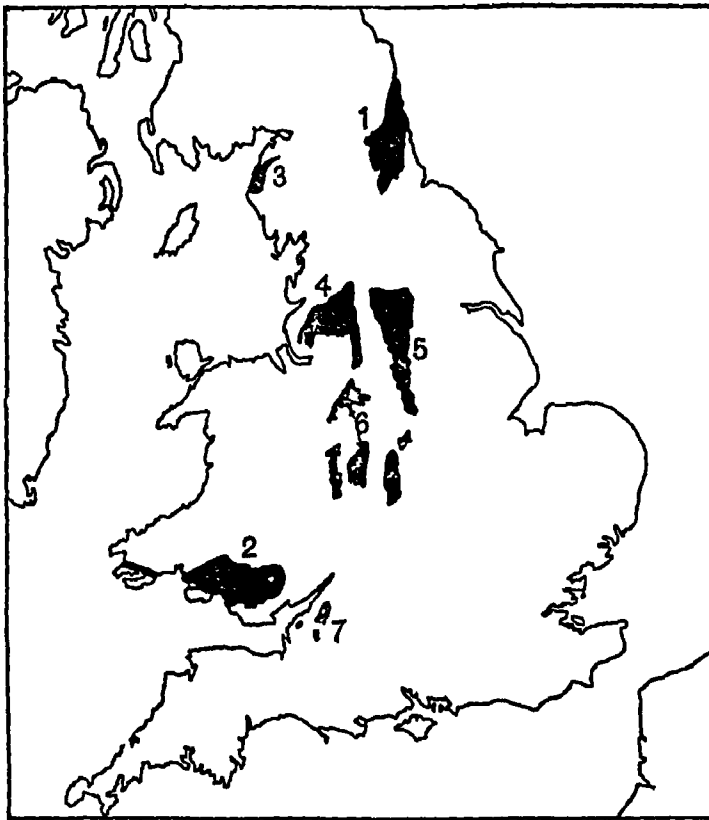


PRODUCTS—The British Isles are situated in the cold temperate zone of deciduous hard-wooded trees, and the oak, beech, elm, ash, willow, &c are common. The chief cultivated crops are cereals (wheat, barley, and oats); root crops (potatoes, turnips, &c.); and fruits.

A considerable portion of the cultivated area is under grass.

PEOPLE.—The inhabitants of the British Isles are descended mainly from two races—the Celtic and the Teutonic. The Celts were the aborigines, and were driven by successive invaders into the hills of Scotland and Wales, and to some extent to Ireland. The Teutons came mainly in three invasions. (1) the Saxons, Angles, and Jutes, (2) the Danes; and (3) the Normans, who became the rulers in 1066. These various invasions account for the composite nature of the English language.

FIG 90 —MAP OF ENGLAND SHOWING COALFIELDS



Walker & Boutall sc.

The total population of the British Isles in 1911 was 45,141,000, or about 373 to the square mile, as compared with an average density of 175 to the square mile for the whole of India. England and Wales are much more densely peopled than Scotland and Ireland.

More than three-quarters of the people live in towns, as compared with only ten per cent. in India.

The people profess the Christian religion.

OCCUPATIONS.—1. Agriculture employs a much smaller

number of people than formerly. The cheapness of imported grains has made corn-growing unprofitable, and cattle-rearing and dairy-farming have taken its place very largely, even in the agricultural parts of the country. A line joining the Humber on the east coast, with Portland Bill on the south, divides England into two parts—the eastern portion being agricultural. The north of Scotland, which is not covered with mountains, and the greater portion of Ireland are pastoral. The chief grains are wheat, barley, and oats, green crops are hay, turnips, hops, and potatoes (the last specially in Ireland). Orchards are found all over the country, the chief fruits are apples, pears, plums, &c

2. **Fishing**.—The cool shallow seas of the north Temperate Zone are the natural spawning beds for many varieties of fish. The British Islands are therefore famous for their fisheries, and there is not a coast on which fishing villages are not found. The herring fishery of the North Sea is world-renowned. Grimsby and Yarmouth are the chief centres. Salmon and trout are found in many of the rivers

3. **Mining**.—The minerals of Great Britain are very important, but Ireland is deficient. The most useful minerals, coal and iron, are found in close proximity, and the abundance of limestone makes the working of iron cheap and profitable.

The principal coalfields are in

England—(1) Northumberland and Durham.

(2) South Wales

(3) Cumberland

(4) South Lancashire

(5) South-West Yorkshire.

(6) Staffordshire.

Scotland—Ayrshire

The Clyde Basin

The Forth Basin

Iron is worked on or near several of these fields. The chief districts are in South Yorkshire, the Furness district of Lancashire, Staffordshire, South Wales, and in the neighbourhood of Glasgow on the Clyde. Copper and tin are found in the south-west of Great Britain, but foreign copper ore is now largely smelted on the South Wales coalfield at Swansea. Lead is mined in Cumberland, and salt in Cheshire, good building stone is found in various parts, granite in Aberdeen, and slate in Wales. Peat is dug from the bogs and used as fuel in Ireland.

MANUFACTURES.—The use of steam machinery has made

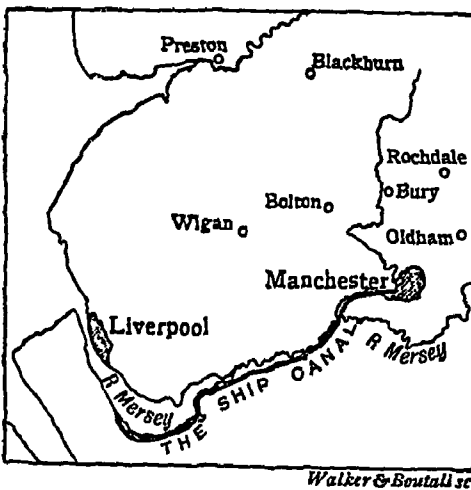
FIG 91 —POLITICAL MAP OF BRITISH ISLES



it very advantageous to build large factories on the coalfields; hence all the great manufacturing industries are chiefly carried on there. The principal manufactures are—I. Cotton goods. II. Iron goods III. Woollen goods. Of lesser importance, silk goods, linen, earthenware, glass, chemicals, leather, paper, and smelting and working of copper and other metals.

I. The Cotton Manufacture.—This is carried on almost entirely upon the Lancashire coalfield. The reasons for this

FIG. 92.—THE COTTON TOWNS.



are—(1) The abundance of coal; (2) the moist climate, which is so suitable for spinning; (3) nearness of the port of Liverpool. The raw cotton is obtained from the United States, India, and Egypt.

The principal towns engaged are:—Manchester and Salford, Oldham, Bolton, Rochdale, Blackburn, Preston, in Lancashire; and Stockport in Cheshire.

- Manchester and Salford (946) form the greatest manufacturing town in the world; within a radius of twelve miles there is a population of nearly two millions. By means of the ship canal from the Mersey, goods can be brought to the city without unloading at Liverpool.

Liverpool, with Birkenhead on the opposite side of the Mersey (joint population 877), is the great cotton port—second in tonnage in Great Britain, and third in the world. It has seven miles of docks alongside the river.

Glasgow, on the Clyde coalfield, and Nottingham have also important cotton industries.

II. THE IRON MANUFACTURE.—Iron-smelting is carried on at (1) Glasgow on the Clyde field; (2) Middlesbrough on the Durham field; (3) Merthyr Tydvil on the South Wales field; and (4) Barrow near the Lancashire field.

Iron and steel goods are made in the South Staffordshire field (the Black Country), at Birmingham, Wolverhampton, and Walsall, cutlery is produced at Sheffield, originally, no doubt, on account of the presence of good grinding stone, arms at Birmingham, Newcastle, and Woolwich (the Government arsenal); cycles at Coventry.

Shipbuilding is carried on at the mouths of the Clyde (Glasgow); Tyne (Newcastle), Wear (Sunderland), Humber (Hull); Thames (London), Mersey (Liverpool); and also at Belfast in Ireland.

III. THE WOOLLEN MANUFACTURE.—The chief centre of this industry is on the Yorkshire coalfield. The raw material comes mostly from Australia and South Africa by way of Liverpool and Hull. The chief towns engaged are Leeds (445), Bradford (288), and Huddersfield.

Woollen cloth is also made on the Ayrshire coalfield at Kilmarnock; fine cloths in the West of England, and blankets at Rochdale.

IV MINOR INDUSTRIES.—Linen is made at Dundee on the Forth coalfield, the flax coming mainly from Russia, and at Belfast—the coal for the factories coming from the Ayrshire field. The Dundee jute trade has declined as the Indian trade has risen.

Earthenware is made in Staffordshire, some of the clay coming from the south coast, it is found cheaper to convey the clay to the coal than the coal to the clay. The chief town of the 'Potteries' is Stoke-on-Trent.

Silk goods are made at Derby, Coventry, and Bradford.

Glass and chemicals are made at St. Helens in Lancashire, near the Cheshire salt district, leather and boots at Leeds and Northampton.

COMMERCE—The manufactures and commerce of Great Britain exceed those of any other country of the world. The tonnage of her ports is nearly double that of the combined shipping of the United States, Germany, Norway, France, and Italy, the five maritime countries next in importance.

The imports may be divided into two classes.—

(1) Raw material for manufacture; (2) Food-stuffs.

(1) The chief raw materials and the countries from which they come are.—

Cotton—United States, India, Egypt

Wool—Australia, South Africa, India

Silk—China, France

Flax and hemp—Russia and India

Jute—India

Timber—Canada, North Europe, Burma

(2) Food-stuffs.

Grain—North America, Russia, India, The Argentine, Australia

Meat—The Argentine, N America and Australasia

Tea and coffee from India, the latter from Brazil also

Butter, eggs, wine, and fruits from various parts of the continent of Europe

British exports consist of manufactured goods and minerals

The chief, in order of importance, are.—Cotton goods, iron and steel, coal and fuel, woollen goods, machinery, chemicals, clothing, linen goods, jute goods, copper, earthenware and ships.

Of these the British Possessions take over one-fourth.

SEAPORTS.—The chief seaports, according to the amount of trade, are the following —

London (4½ millions, including suburbs, 7 millions) is the largest city and seaport in the world. The density of population of the County of Middlesex, which contains the greater part of London, is 11,000 to the square mile. Nearly one-third of the exports and over one-third of the imports are dealt with here. Near the mouth of the Thames is Tilbury, the outport, with an increasing trade.

Liverpool and Birkenhead form one great port, which has risen on account of the development of the manufactures in Lancashire and Yorkshire and the increase of trade with America.

Cardiff exports the produce of the South Wales coalfield. Other ports on the Bristol Channel are Newport and Swansea.

The Tyne Ports —Newcastle (267), North and South Shields, and Sunderland, all export coal, and carry on a great trade in iron, machinery, and shipbuilding.

Hull (278), on the east coast, has a large trade with the Baltic and Mediterranean Seas.

Glasgow (784) exports the produce of the Clyde coalfield, and trades chiefly with America.

Southampton is advancing rapidly as a port. It has steamship lines going to Africa and South America, and part of the North American trade is going to Southampton instead of Liverpool in order to enable the companies to compete with the Continental lines.

Dover has a large trade with French, Belgian, and Dutch ports.

Manchester (946) is a rising port since the construction of the ship canal. Its tonnage is nearly half that of Glasgow.

MEANS OF INTERNAL COMMUNICATION.—The British Islands are well supplied with railways, canals, and good roads. Nine large railway systems radiate from London, and Scotland and Ireland are also well provided with railways. The large rivers are joined by navigable canals, and all the towns are connected by good metalled roads.

The chief canals are the Manchester Ship Canal, and the Caledonian Canal across the middle of Scotland, which saves the dangerous journey round the north coast.

GOVERNMENT.—The form of government in the United Kingdom is that known as a Limited Monarchy, consisting of the Sovereign and Parliament. The full title of the Sovereign is

King of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, and Emperor of India.

Parliament is composed of the **House of Lords**, consisting of 589 members, all with the exception of the bishops possessing an hereditary right to sit, and the **House of Commons**, consisting of 670 members, elected by ballot to represent the counties and parliamentary boroughs.

For purposes of local government, the county is divided into **County Council** districts, which, except in thickly peopled areas, coincide with the counties

TOWNS —Most of the important towns have been mentioned in connection with their industries or trade. Other towns are the following .—

In England—There are sixteen towns in England with a population of over 250,000, and as many as ninety-nine with more than 50,000 inhabitants. In India there are only seventy-nine such towns

Oxford, Cambridge, Durham, London, Liverpool, Leeds, Sheffield, Manchester, and Birmingham are University cities

Scarborough, Hastings, Brighton, and Llandudno are the most important of a large number of seaside watering-places

Cheltenham, Bath, Buxton, and Harrogate are well-known inland watering-places.

Chatham, Portsmouth, and Plymouth are naval stations

Windsor, on the Thames, is the residence of the King On the opposite side of the river is Eton, which has a famous public school

In Scotland.—Glasgow (784) is the largest and most important city.

Edinburgh (with its port Leith, 400) has been the capital for centuries

Paisley, near Glasgow, has manufactures of shawls and thread Aberdeen (163) the largest town in the Highlands, is a considerable port, and has granite quarries in the vicinity The Scottish universities are at Edinburgh, Glasgow, St. Andrews, and Aberdeen.

In Ireland.—Dublin (362) is the capital, the largest city, the centre of a university It has important breweries and spirit distilleries

Belfast (403) is the first industrial city in Ireland It is the centre of the Protestant population, who live mainly in the north

Limerick (38) is an ancient city on the Shannon estuary There are two Irish universities, both with headquarters at Dublin

Cork (76) is the third city in Ireland Queenstown, in Cork Harbour, is a port of call for ships

DOMINIONS OF THE BRITISH EMPIRE.—The vast possessions of Britain are scattered all over the world. The principal parts are —

British Isles.—121,000 sq miles, 45,000,000 inhabitants

European Possessions.—121 sq miles, 210,000 inhabitants.

Gibraltar, Malta, and Gozo

Asiatic Possessions.—1,950,000 sq miles, 320,000,000 inhabitants

India and Burma (1,800,000 sq miles, 316,000,000 inhabitants), Ceylon, Cyprus, Straits Settlements, Hong Kong, Aden, British Borneo

African Possessions.—Over 2,700,000 sq. miles, 42,000,000 inhabitants.

The Union of South Africa, comprising the Cape of Good Hope, Natal, Orange Free State, and the Transvaal. Rhodesia, Bechuanaland, Gambia, Sierra Leone, Gold Coast, Mauritius, St Helena, and vast territories in Eastern Africa, and the Niger Basin

American Possessions—4,000,000 sq. miles, 9,000,000 inhabitants.

Canada, Newfoundland, British Honduras, British Guiana, British West Indies, Falkland Islands, Bermudas

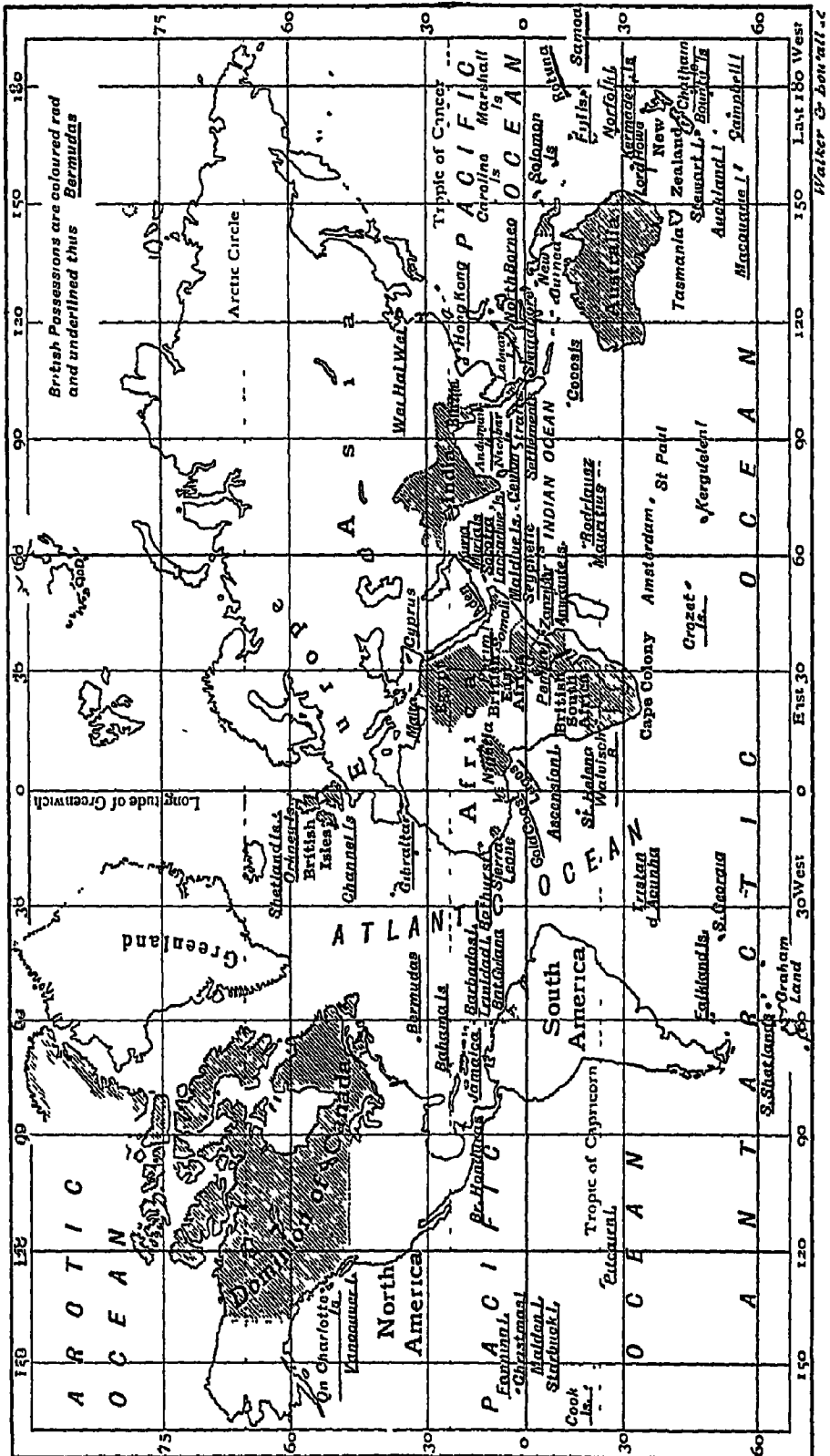
Australasian Possessions.—3,174,000 sq. miles, 6,000,000 inhabitants

Australia, Tasmania, New Zealand, British New Guinea, Fiji

Total British Empire, 11,199,000 sq. miles, about 345,000,000 people

EXAMINATION PAPERS

- A 1 Why is it supposed that the British Isles once formed part of the mainland of Europe?
- 2 How are the two chief islands separated from each other and from the mainland?
- 3 Draw a map of the British Isles and insert the chief physical features
- 4 What causes have contributed to the commercial pre-eminence of Britain?
- B 1 Where are the chief elevations of Great Britain and Ireland, and what is their effect upon the commerce and climate?
- 2 Show that the British Isles possess a mild and equable climate compared with other countries in the same latitude
- 3 What are the chief crops in—(a) Great Britain, (b) Ireland? How have these changed of late years?
- 4 Explain how the extent and character of the coast-line have facilitated trade



- C 1 How does the insular position of the British Isles affect trade ?
 2 What are—(a) the principal mining, (b) the principal manufacturing industries ?
 3 Give the population of the three principal parts of the British Isles. Compare the population with that of other countries
 4 What are the chief races inhabiting the British Isles ? In what parts are they chiefly found now ?
- D 1 Show the effect of the following upon the climate of the British Isles. The direction of the mountain ranges, the Gulf Stream, the prevailing westerly winds
 2 Name, and give the situation of, the five chief coalfields of England
 3 Name the three principal manufacturing industries of the British Isles, and give reasons for their situation
 4 Where in Great Britain are the following found —Tin, lead, slate, granite, clay, iron-ore ?
- E 1 Name, and give facts concerning, the Tyne, Thames, Clyde, and Bristol Channel ports
 2 From what countries do the British Isles obtain their food supplies ?
 3 Whence does Great Britain receive timber, raw cotton, wool, and silk ?
 4 How do you account for the number of large towns in Great Britain ?
- F 1 Where are the following, and for what are they noted —Bath, Harrogate, Llandudno, Brighton ?
 2 Mention an interesting fact about each of the following —Windsor, St Andrews, Cork, Coventry, Paisley, Grimsby
 3 Give some account of the form of government of the United Kingdom
 4 Give the approximate size and population of the British possessions in Asia, Africa, America, and Australasia

FRANCE

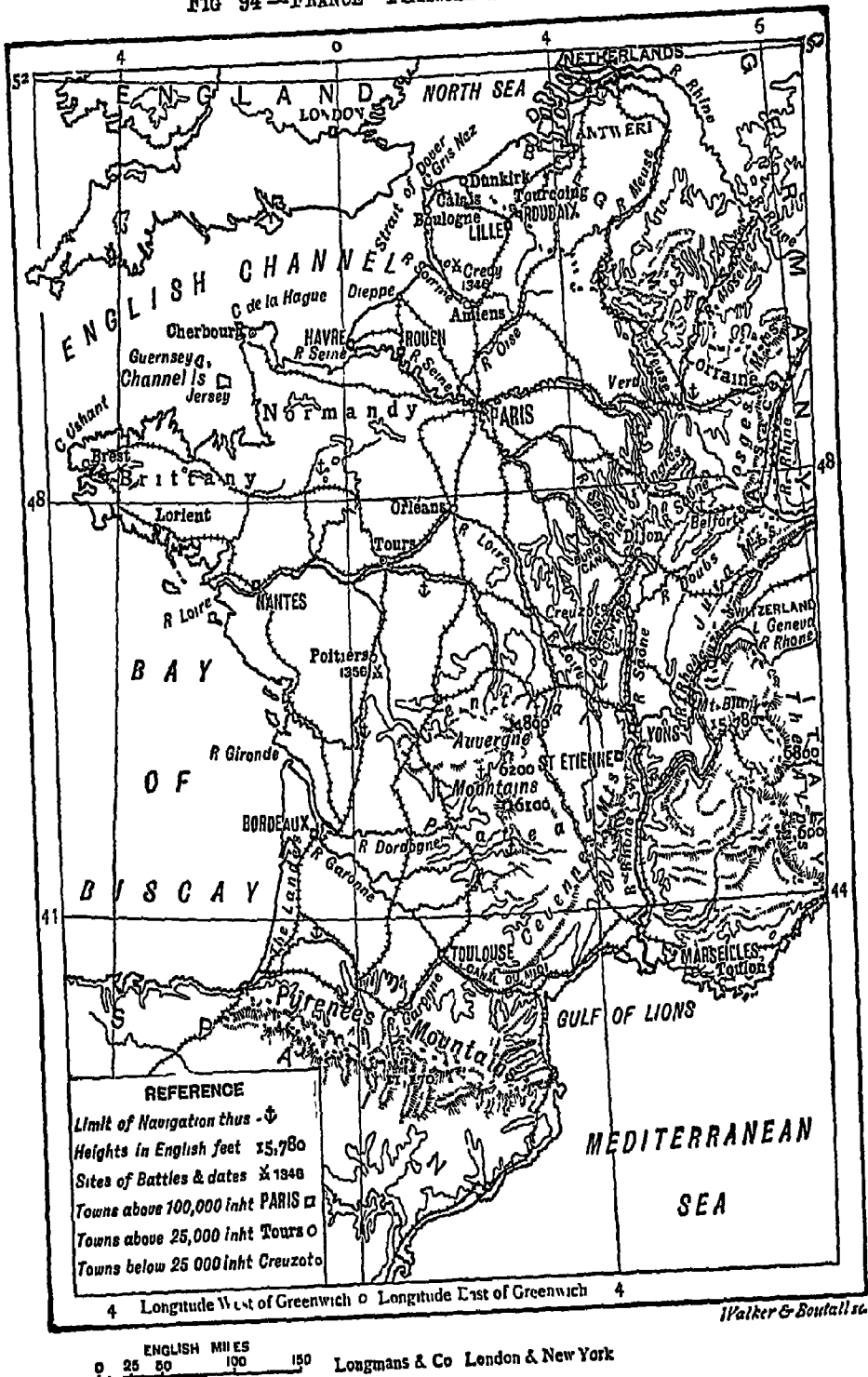
BOUNDARIES AND SIZE.—The boundaries of France are almost entirely natural boundaries—the sea, the English Channel, the Bay of Biscay, and the Mediterranean Sea lying on three sides, the Pyrenees separating the country from Spain, the Alps from Italy, and the Jura from Switzerland. Only on the borders of Germany and Belgium is the boundary artificial.

The Strait of Dover is only 20 miles wide, and London and Paris are within six hours' journey of each other.

The Pyrenees are a range of lofty mountains, most of which lie within the borders of Spain. The passes are high and difficult, and the great roads run round the ends of the range.

The area is 213,000 sq m, or about the same size as Burma.

FIG 94—FRANCE PHYSICAL AND POLITICAL



COAST-LINE.—Three coasts present themselves to the sea, the north, west, and south. Of these the north coast is the most broken, Cape Ushant, Cape de la Hague, and Cape Gris Nez (Grê Nā) projecting into the English Channel.

On the whole the coasts are rocky, except in the south-west, where the shores of the Landes are low and sandy.

RELIEF—The surface of France slopes from the south-east towards the north and west

1 The highest mountains lie on the borders. Of these the chief are the Alps, with Mont Blanc 15,700 ft (nearly three miles) high, and the Pyrenees.

2. The chief system of highlands in the interior is the Central Plateau, the average height of which is about 3,000 ft.

3. The eastern edge of the Central Plateau consists of a long range of heights rising steeply from the valley of the Rhone and called the Cevennes.

4. The Auvergne Mountains cross the Central Plateau from north to south

Many of the mountains upon the Central Plateau are the craters of extinct volcanoes. Such are called Puy. The Central Plateau is mostly wild and rugged. Few plants will grow except in the sheltered valleys, and hence this region is very thinly peopled.

LOWLANDS.—Stretching away to the north and west of the Central Plateau are fertile plains, or gently rolling country crossed by rivers that are navigable for many hundreds of miles. The greater part of France consists of lands lying below an elevation of 1,000 ft.

RIVERS—France is one of the best-watered countries of Europe. It possesses many navigable rivers, of which the Seine, Loire, Garonne, and Rhone are the main streams. As the highlands lie in the south-east and the general slope of the lowlands is towards the north and west, it follows that most of the rivers must flow in these directions. Further, the greater part of their courses must be across the lowlands where their currents are slow, and hence they are of great service to navigation.

1 The Seine (430 miles) rises in the Plateau of Langres, and, after a winding course, and after receiving the waters of many tributaries, flows into the English Channel. It opens into a wide estuary just before reaching

the sea, and so affords a safe harbour for ships. It drains an agricultural and manufacturing district, and has many towns upon its banks, the chief being Paris, the capital of France, Rouen, a large manufacturing centre; and Havre, an important seaport.

2 The Loire (570 miles) rises in the Cevennes, and discharges its waters into the Bay of Biscay. It is navigable for 500 miles, drains a wide stretch of fertile lowlands, and has many towns of historic interest upon its banks, such as Orleans and Tours.

3 The Rhone (490 miles) rises in the Alps in Switzerland, flows through Lake Geneva, and, after entering France, makes a sharp bend to the south, continuing in this direction until it enters the Mediterranean. Its course is so rapid that it brings down large quantities of mud and earth, which have been deposited at its mouth, thus forming a delta.

4 The Garonne and Dordogne drain the south-western part of France, and, uniting, form the estuary known as the Gironde.

CLIMATE AND RAINFALL.—France lies farther south than England, and is therefore warmer in the summer. It also has more sunshine. The west of the country stretches so far into the Atlantic that it is cooled in summer and warmed in winter by the winds from the ocean. These winds also bring abundance of moisture, hence the west has a much damper climate than the east. On the whole, there is a sufficient rainfall for the growth of a great variety of crops.

FERTILITY OF SOIL.—Less than one-fifth of France is occupied by mountains, about one-fourth by plateaux. This leaves more than one-half for the lowlands, and they contain a large proportion of fertile soil. This, combined with an ample rainfall, an abundance of rivers and streams, and plenty of sunshine, places France in the front rank of agricultural countries.

PRODUCTS.—**Agricultural.**—1. The vine is the most valuable of all French crops, and France is the chief wine-producing country in the world.

2. **Grain Crops.**—Of these the wheat crop of France is next in amount to that of the United States, and is about four times that of the United Kingdom. Other grain crops are barley, oats, and maize.

3. France also grows green crops, such as potatoes and turnips.

4. There are also crops of sugar-beet and tobacco, and large districts are devoted to mulberry-trees, the leaves of which furnish food for the silkworms.

Mineral.—The mineral wealth of France is small, the most serious deficiency being in that most needed, viz. coal.

There are two chief coalfields, and many smaller ones scattered over different parts of the country.

1 The Northern Coalfield in the extreme north-east Iron is also found in the same neighbourhood, and many manufacturing towns have sprung up, the chief being Lille

2 The Southern Coalfield upon the eastern border of the Central Plateau Here also are several manufacturing towns, the chief of which are Lyons and St. Etienne

Coal is imported in considerable quantities from England and Belgium.

MANUFACTURES.—The manufactures, arranged in the order of their values, are :—1. Woollen goods; 2. Silks; 3. Cotton goods; 4. Linens; 5. Machinery.

1 The woollen industry is carried on chiefly in the north, in which district large numbers of sheep are kept, where supplies of foreign wool are easily obtained, and where is plenty of coal and iron The town of Lille is engaged in the woollen as well as in many other manufactures

2 Silks —The silk manufactures are still carried on mostly in the valley of the Rhone, where they first grew up in consequence of the introduction of the silkworm The chief towns are Lyons, the second town in France in size, and St. Etienne, both of which are near the southern coalfield and have excellent water for dyeing

3 The cotton industry is carried on chiefly in the towns of Normandy. Rouen is the centre of the industry It receives its supplies of cotton from America through the port of Havre, which is to Rouen on a small scale what Liverpool is to Manchester

4 Linen is made mostly at Lille, the largest manufacturing town in the north That part of Belgium which lies near to Lille grows the best flax in Europe, and supplies of coal and iron are to be had from the neighbouring coalfield

5 Machinery is made in many large towns, but Creuzot upon the southern coalfield is looked upon as the headquarters of the industry.

TRADE.—France has considerable internal as well as foreign trade, but her exports are not much more in value than half those of the United Kingdom, while her imports are less than half. Much of the French trade is done in English ships.

Means of Internal Communication.—The rivers play an important part in internal trade, all the great rivers being navigable, some of them for many hundreds of miles Further, all the great rivers are united by a splendid system of canals, and goods shipped at Havre on the North

Sea can be carried by water right across the country to Marseilles on the Mediterranean, or to Southern Germany by the Rhone and Rhine Canal

FOREIGN TRADE.—Imports.—Four articles, viz. wool, coal and coke, raw silk, raw cotton, together make up about one-third of the imports.

Many other kinds of goods are imported in large quantities, such as timber and wood, hides and furs, wine, &c

Exports.—Four articles also make up about one-third of the value of the exports, viz. woollen and silk manufactures, wine, raw wool, and yarn.

There are also many other kinds of goods that are exported, such as leather-ware, cheese and butter, manufactured cotton goods, &c

It will be seen by the above that France both exports and imports large quantities of wine. The importation of wine has only sprung up in recent years, and is due to the ravages of an insect pest that has destroyed an immense number of vines

SEAPORTS.—The chief ports arranged in the order of their importance are:—

1 Marseilles (550) is the chief seaport of France. It trades chiefly with the countries of the Mediterranean, and also with India, China, and Australia

2 Havre (136), at the mouth of the Seine, is the chief seat of the trade with America

3 Bordeaux (261), upon the R. Gironde, has a large export trade in wine.

TOWNS AND DISTRICTS.—1 The Northern Plains—This is a wide stretch of fertile lowlands drained by the Seine and other rivers. It contains a coalfield, upon which many manufactures are carried on, and is the most thickly peopled part of the country.

PARIS (2,888) is the capital of France. It stands upon the Seine and is situated in about the centre of the Northern Plains. It is the very heart of French life, and so favourable is its position for the site of a great city that it ranks next to London as the second city in the world. Its situation is so exposed that it is surrounded by a wall and ditch and a ring of strong forts. It contains many fine buildings, of which the most famous are the Cathedral and the Louvre, the latter containing the finest collection of pictures and statues in the world. Paris is associated with a large number of industries

Havre is the chief seaport in the north of France, and has considerable trade with America and England.

Rouen is the old capital of Normandy, and stands a little higher up the Seine. It is the chief seat of the French cotton manufacture.

Calais, Boulogne, and Dieppe have a coasting trade, mostly with England, and are of interest as starting-points for people travelling between France and England.

Lille (217) is the largest manufacturing town in the north.

2 Lowlands of the Loire Basin with Normandy and Brittany.—This is almost a purely agricultural district, drained by the Loire and other streams. The coast of Brittany abounds in fish, and the fishermen are the hardiest seamen in France.

Lorient and Brest are two naval ports upon natural harbours.

Cherbourg, on the coast of Normandy, has, at great expense, been made into a strong naval port.

Nantes is a seaport at the mouth of the Loire.

Orleans and Tours are very old towns upon the Loire.

3. South western France—This comprises the greater part of the basin of the Garonne. South of the R. Gironde is the flattest part of France. It is also the least populous and most unhealthy. The best wine is made in the valley of the Garonne.

Bordeaux is the chief town. It has a large export trade in wine.

4 Valley of the Saône and Rhone.—This is one of the most thickly populated parts of France. It contains a coalfield and is the seat of silk and other manufactures.

Marseilles is an important port, its trade has greatly increased since the opening of the Suez Canal. Among its local industries are the refining of oil and the making of soap, due to the presence of the olive.

Lyons (523) is the third town in France in point of size, and is the centre of the world's silk-industry.

St Etienne supplies Lyons with coal, and manufactures ribbons and other silk goods.

Toulon is a naval station with an almost impregnable fortress.

Note—Alsace and Lorraine were restored to France from Germany by the Peace Treaty.

RAILWAYS—All the great railways radiate in every direction from Paris, which they connect with all the other large towns and seaports.

POPULATION—About $39\frac{1}{2}$ millions, or 190 to the square mile.

The People—In very early days France was peopled by the Celts, but the Celtic tongue is now heard only in a part of Brittany, whereas the Latin language, altered by degrees into the Modern French, has spread over almost the entire country. It is the most polished and expressive of all languages.

Government.—The Government is Republican, at the head of which is the President of the French Republic. The Legislature consists of two chambers, viz the Senate and the Chamber of Deputies. Members of the latter are chosen by the people, and every man has a vote

Foreign Possessions.—In Africa, France holds Algeria, and also has a protectorate over Tunis; she also owns Senegal, the French Soudan, Dahomey, as well as French Equatorial Africa, a district of the Congo basin

Madagascar, the third largest island in the world, is now a French colony, and Réunion

In Asia she owns Pondicherry in India, Cochín-China and French Tongking, Annam, and Cambodia

Corsica, a large island in the Mediterranean, belongs to France. It is very mountainous. Its capital is Ajaccio, the birthplace of Napoleon Buonaparte

In America French Guiana, Martinique, Guadeloupe, and other islands in the West Indies

In Oceania she possesses New Caledonia, Tahiti, and other islands

EXAMINATION PAPERS

- A**
1. Where are the Pyrenees, Mont Blanc, Jura Mts, the Cevennes, and the Puys?
 2. Point out the chief capes, giving their names and positions Describe the coast from the Pyrenees to the Strait of Dover
 3. Name the four chief rivers How do you account for the fact that three of them flow towards the Atlantic?
 4. What are the chief crops? Name some crops that are grown in France but not in England
- B**
1. Explain why France is less a manufacturing country than England
 2. Why is the north-eastern corner of France so thickly peopled? What towns are to be found there?
 3. What are the chief manufactures, and where are they carried on?
 4. What kinds of goods are made at Lille, Lyons, St Etienne, Creuzot, and Rouen?
- C**
1. Name the chief exports and imports
 2. What are the chief seaports, and where are they situated?
 3. Describe the valley of the Rhone and Saône what are the chief occupations of the people, and which are the chief towns?
 4. Draw an outline map of France, inserting rivers and chief towns

BELGIUM AND HOLLAND

GENERAL DESCRIPTION.—Holland, or The Netherlands, as it is properly called, is the northern portion, and Belgium is the southern portion, of the remarkable country which lies between North-eastern France and Western Germany. As the name 'Netherlands,' or 'Low Countries,' implies, the surface is low, particularly in Holland, where a very large district is actually below the level of the sea, which is kept back by great embankments, called dykes. The surface gradually rises towards the east and south-east, and hence only a small part of Belgium is very low. In the extreme south-east of Belgium the surface rises to a height of 1,000 ft. The people inhabiting these countries have for many centuries been famous for their industry and skill in manufactures and commerce, the Dutch having long been daring sailors, and at one time masters of the sea. Before 1830 there was no such kingdom as Belgium, but that country formed part of The Netherlands.

The English term *Holland* will be used in this chapter, although the correct name of that country is *The Netherlands*, and the former name only that of two coast provinces.

BOUNDARIES.—North and West by the North Sea. East by Germany. South-west by France.

There are no natural boundaries on the land side, and the Belgian frontier is defended by strong fortresses. Belgium has always been famous for its strongly fortified cities. Holland depends largely for its defence on the power to flood the surface, and hence that country has but few fortresses.

SIZE.—Belgium, over 11,300 sq. miles in area. Holland, over 13,600 sq. miles in area.

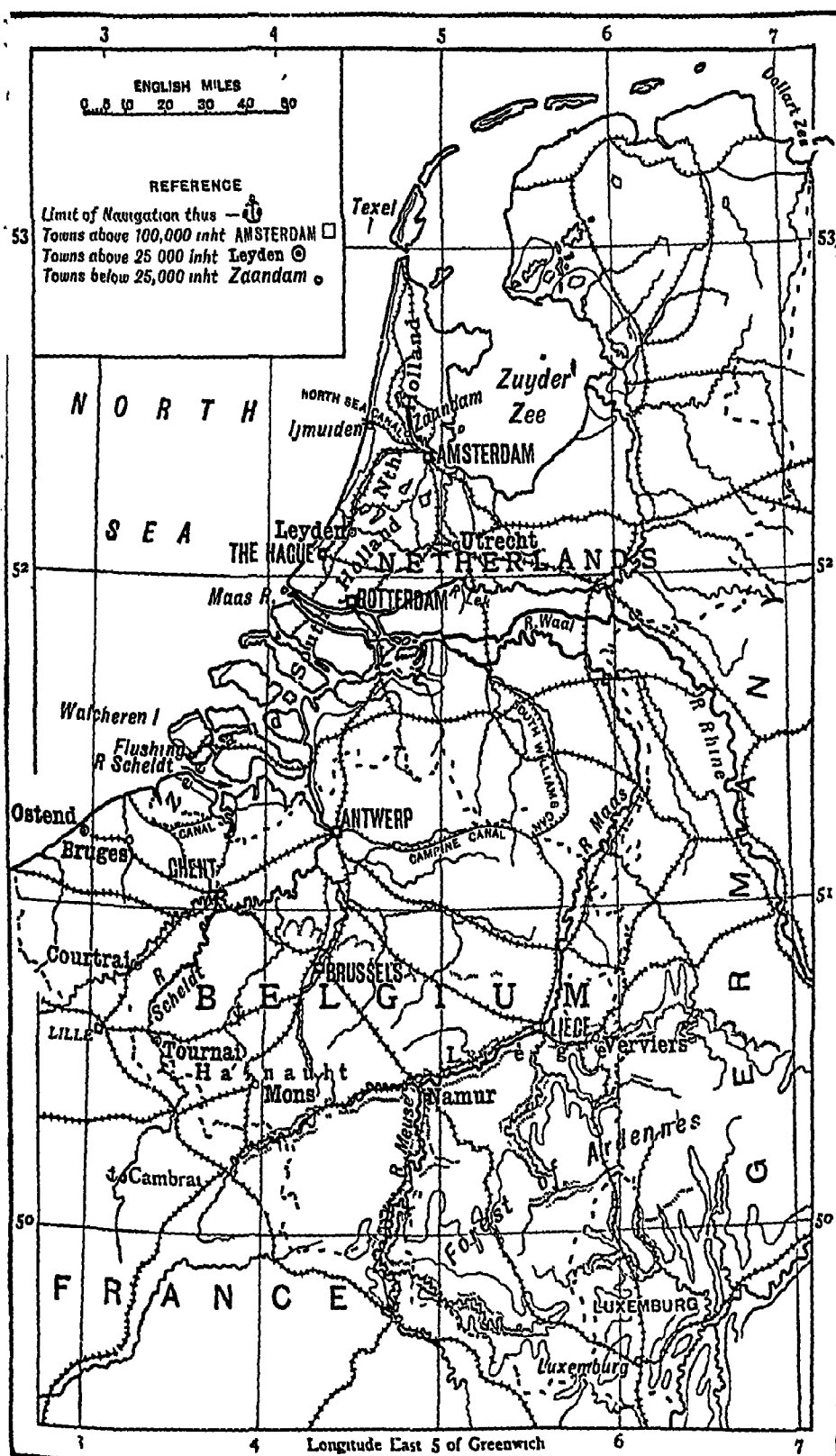
Together, the two countries are a little smaller than Mysore.

COAST-LINE.—This is skirted throughout its entire length on the islands and the mainland by sand hills or dunes, which act as a natural barrier to the sea.

SEAS, &c.—Dollart and Zuyder Zees, both formed by inroads of the ocean in the twelfth and thirteenth centuries. There are many channels between the islands in the deltas of the Rhine and Scheldt.

RELIEF.—The western part of Holland consists of a large

FIG 95 — BELGIUM AND HOLLAND PHYSICAL AND POLITICAL



tract of country and a number of islands almost entirely below sea level. Other tracts of low land lie on the shores of the Zuyder and Dollart Zees. To the east and south the land very gradually rises, but there is no elevation in Holland to be distinguished as a hill. In Belgium the surface rises towards the south and east, and in the region called the Forest of Ardennes forms part of the plateau which extends across Central and Southern Germany.

Lowlands.—The lowest land forms the provinces of North and South Holland and Zeeland, and nearly all the surface of Belgium and Holland forms a part of the Great European Plain.

RIVERS—Holland possesses the mouths of three large rivers: The Rhine, the Maas, and the Scheldt.

The middle course of the Maas, or Meuse, and the main part of that of the Scheldt, are in Belgium.

1 The Rhine divides soon after entering Holland, and embraces a very large portion of that country between its numerous branches. The chief town on the Rhine in Holland is Rotterdam.

2 The Maas (550 m), or Meuse, rises in France, flows through Belgium, and joins the Waal. The main stream by which both the Rhine and Maas enter the sea is called the Maas. Numerous busy manufacturing and famous historical cities are on the banks of this river. The chief are Namur and Liège.

3 The Scheldt (250 m) is almost entirely in Belgium, of which it drains nearly half. The channels by which it reaches the sea are all in Holland. Upon this stream are the two great cities, Antwerp and Ghent.

CLIMATE AND RAINFALL.—The winters are cold, the summers are hot, and the rainfall is sufficient for agriculture.

FERTILITY OF SOIL.—Much of the soil is naturally fertile, and other portions have been made productive by the industry of the people. Therefore a very small portion is uncultivated or waste land, especially in Belgium, where the farms are generally very small, and every possible foot of ground is made to bear crops.

PRODUCTS.—1. **Agricultural.**—The climate of Holland is *damp*, the winters more *severe*, and the soil *moister* than in Belgium. Hence the crops are not precisely the same.

In Belgium.—Wheat, wine, sugar-beet, and tobacco, together with crops similar to those grown in Holland.

In Holland.—Flax, potatoes, hemp, and rapeseed, with rye, wheat, and oats, are the chief crops.

The most important farm products are butter, cheese, and cattle from the extensive pastures.

2. **Mineral**—Belgium is as remarkable for the abundance of its mineral wealth as Holland is for its deficiency.

Belgium.—Coal, iron, and zinc are the most abundant. The two chief coalfields are in the provinces of Hainault and Liège. Iron ore abounds and is found near the coal. Hence Belgium is largely engaged in iron production and manufacture.

Holland.—Peat is a valuable product.

MANUFACTURES.—Holland is chiefly engaged in farming and trading, but its manufactures are by no means unimportant, in spite of the lack of coal, for wind is extensively used in working machinery. **Textile Fabrics.**—Cotton, linen, and woollen are made and **Shipbuilding** is carried on.

Many mills are also engaged in the preparation of colonial and tropical produce for the markets.

Belgium is an exceedingly important manufacturing country. The chief manufactures are—1. Linen; 2. Woollen; 3. Iron; 4. Cotton.

Linen is chiefly made near the flax-growing western districts at Tournai. Woollen cloth at Verviers, Carpets at Brussels and Tournai. Iron chiefly at Liège, and Cotton at Ghent.

TRADE.—The Dutch carry on a great trade with their East Indian colonies, and much of their commerce is the re-export of colonial produce. The trade of Belgium is more strictly confined to the exchange of manufactured and other products for raw materials, &c, but an increasing amount of goods is carried through Belgium to and from continental countries, especially since the construction of the Alpine tunnels.

MEANS OF INTERNAL COMMUNICATION—These are excellent by river, canal, road, and railroad.

In Holland the total length of canals is enormous, and a very great amount of traffic passes along them.

FOREIGN TRADE.—Imports of Holland.—Wheat and flour, manufactured iron, textile fabrics, and, in addition, colonial produce, as spices, coffee, rice, &c.

Exports—1 Home produce—as butter, cheese, cattle, linseed, fish, spirits, &c.

2 Foreign Produce —Coffee, rice, tobacco, spices, &c

Imports of Belgium.—Wheat and flour, raw materials for manufactures, as cotton, flax, hemp, wool; chemicals, minerals, timber.

Exports.—Yarns of various sorts, wheat and flour, machinery, cloth, iron, sugar.

SEAPORTS —In Holland the chief are Rotterdam, Amsterdam, and Flushing.

In Belgium, Antwerp, Ghent, and Ostend.

Rotterdam (446) —The trade of Rotterdam is half as large again as the united imports and exports of Amsterdam and Flushing. By means of deep canals the largest vessels pass into the heart of the city. Much difficulty has been experienced in keeping open a deep-water channel in the river mouths, and the shipping of Rotterdam mostly passes along a ship canal.

Amsterdam (587) —This city is built upon numerous islands and canals.

Flushing is the Dutch port nearest to the British Isles, and has an amount of traffic nearly equal to that of Amsterdam.

Antwerp (314) has a splendid commercial position on the Scheldt. Through it pass great quantities of merchandise between the other continental countries and all parts of the world.

Ghent (164) is reached by an important canal from the Scheldt estuary, and has considerable coasting and inland traffic.

Ostend is the Belgian port nearest to England, and is a busy packet station.

TOWNS —In HOLLAND —Amsterdam (565) is the largest city, and, though not the chief seaport, it is the commercial capital of Holland. The merchants of Amsterdam carry on a most extensive and varied commerce, and many industries are pursued in and about the city, of which the chief is diamond-cutting.

Rotterdam (*see* Seaports).

The Hague (290) is the seat of government.

Utrecht (122) is a busy commercial and manufacturing city.

Leyden possesses a great university.

In BELGIUM.—Brussels (637) is the capital and the largest city. It is a well-built modern city with important manufactures.

Antwerp, Ghent, and Bruges are famous old towns, all having been great in commerce and manufactures in the Middle Ages.

Liège (175) is the centre of the iron industry.

POPULATION.—Of Holland, 6,000,000, or 488 to a square mile.

Of Belgium, 7,000,000, or about 652 to a square mile.

The United Provinces of India have 433 to a square mile. Cochin has 596 to a square mile, the densest population in India.

THE PEOPLE—The people of Holland are called Dutch, and are of Teutonic race, with a Low German language. The Belgians consist of two distinct races: one of Celtic origin speaking French, and the other a Teutonic race, related to the English, who speak the Flemish language, which is nearly allied to English.

GOVERNMENT.—Each country is a Limited Monarchy, with a Parliament of two Houses. In Holland this Parliament is called the States-General.

In Belgium the House of Representatives and the Senate compose the Parliament.

FOREIGN POSSESSIONS—Holland possesses large territories in Asia, America, and Australasia.

In Asia, Java, part of Sumatra, Borneo, and Celebes, with many of the neighbouring islands.

In America, Dutch Guiana or Surinam, and some small West Indian islands.

In Australasia, a large portion of New Guinea.

The total extent of Dutch foreign possessions is about sixty times the size of Holland.

Belgium possesses the Belgian Congo in Central Africa.

Luxemburg, to the south-east of Belgium, is in two parts, one ruled by a grand duke and the other forming a province of Belgium. The Grand Duchy is about 1,000 sq. miles in extent, and has about 250,000 inhabitants, whose chief occupations are agriculture and mining, together with some manufactures. The chief town is Luxemburg.

EXAMINATION PAPERS

- A 1 State the extent and boundaries of Holland and Belgium.
 2 Describe the surface of Holland.
 3 Give an account of the river system of Holland and Belgium.
 4 Compare the climate of Holland with that of Belgium.
- B 1 What natural disadvantages have been overcome by the Dutch in commerce and manufactures, and how?
 2 Name the minerals and the crops of Belgium.
 3 Give lists of the imports and exports of Holland, and indicate any peculiarity.
 4 Name the chief seaports of Holland and Belgium, and enumerate the most important articles of commerce.

part there are some large irregular islands lying close to the mainland, and in the east are the remarkable lagoon-like openings called *Haffs*, which are separated from the main body of the sea by very narrow spits of land.

SEAS, &c.—The North Sea, with the *Dollart Zee* and the mouth of the *Elbe*. The Baltic Sea, with the *Stettiner Haff* and the Gulf of Danzig.

ISLANDS.—In the North Sea, *Heligoland*, ceded by England to Germany in 1890.

RELIEF.—The slope of Germany is generally from south to north. The country is divided into the *Southern Highland* region and the *Northern Plain*.

The highest mountains are in the South of Bavaria, where the northern ranges of the Alps reach a height of from 8,000 to 10,000 ft. The mountains generally are of moderate height, ranging from about 3,000 to 5,000 ft, and are frequently wooded to their summits.

1. In the south-west the ranges are the *Black Forest* and the *Vosges Mountains*, on the east and west of the Rhine respectively.

2. Between Germany and Bohemia are the *Bohemian Forest*, *Erzgebirge*, and *Sudetes*

3. In the centre of Germany are the *Harz Mountains*

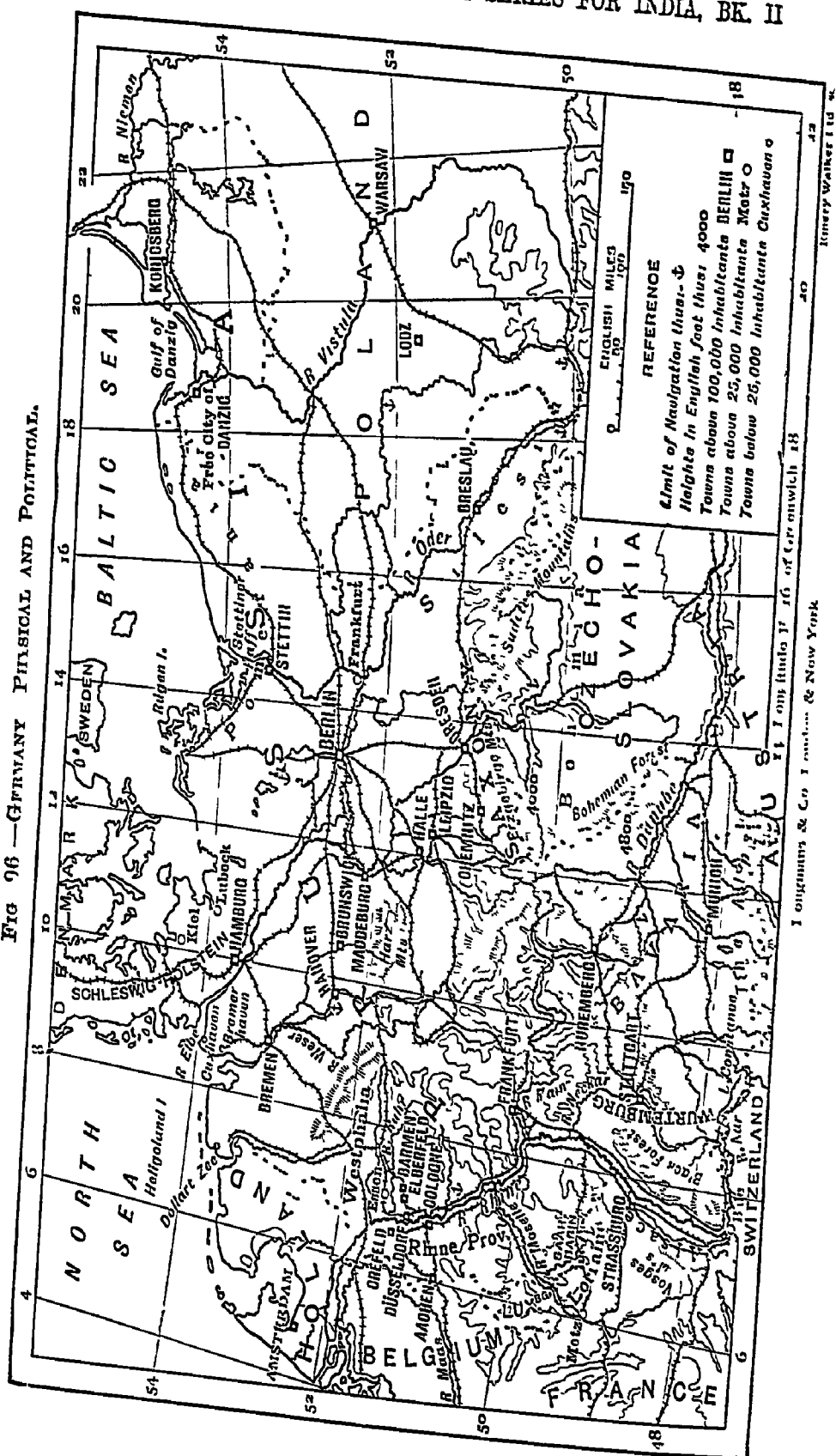
Plateaux.—The highland districts of Germany generally consist of plateaux, upon which the mountain ranges lie. The chief plateau is that of Bavaria, which is over 1,000 ft. in average height, and the surface of which is largely marshy

Lowlands.—The whole of Northern Germany is lowland, and forms part of the *Great European Plain*, which extends from the Ural Mountains to the shores of the Netherlands

RIVERS.—The chief rivers of Germany are the *Niemen*, *Vistula*, and *Oder*, flowing into the Baltic, *Elbe*, *Weser*, and *Rhine*, into the North Sea, *Danube*, flowing eastward from Bavaria.

All the large rivers with northerly courses, except the *Weser*, rise to the south or east of the German frontier, and, being navigable almost throughout their courses, afford valuable means of communication between Germany and the neighbouring States. The most important river in Germany, the *Rhine*, reaches the sea through Holland.

FIG 96—GERMANY PHYSICAL AND POLITICAL.



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The Niemen (400 m) and the Vistula (630 m) have the greater part of their courses in Russia. Great rafts of timber are floated down the Vistula to the port of Danzig, which has considerable commerce in summer.

The Oder (550 m) is almost entirely a German river. The chief towns on its banks are Breslau, Frankfurt-on-Oder, and Stettin, on the mouth.

The Elbe (690 m) enters Germany through Saxony, and flows northwest to the North Sea. This is a very important river, with many tributaries, of which the Spree is the most familiar, having Berlin upon its banks. The chief cities on the Elbe are Dresden, in Saxony, and Hamburg, at the head of the estuary.

The Weser (380 m) is entirely in Germany, and drains an extensive area in the western portion of the country. The most important town is Bremen, which is some distance from the sea, and is no longer reached by ships, although controlling an extensive commerce.

The Rhine (760 m), the second longest river in Europe outside of Russia, is formed by the union of a vast number of Alpine streams in Switzerland, flows through Western Germany, and forms a delta which embraces a considerable part of Holland.

The Rhine flows partly through a lovely valley where the steep banks are covered with vines, and partly through busy manufacturing districts. The chief tributaries are, on the left bank, the Aar in Switzerland, draining a great part of that country, and the Moselle, which drains the western slopes of the Vosges. On the right, the Neckar, Main, and Ruhr. Some important manufacturing towns in the river basin are Dusseldorf, Barmen, and Elberfeld. Some historic towns are Cologne and Strassburg. Two important commercial towns are Frankfurt-on-the-Main and Rotterdam (in Holland).

CLIMATE AND RAINFALL.—The climate of Germany, speaking generally, is colder in winter, and warmer in summer, than that of England.

This is due to the fact that the climate of Germany is less influenced by the ocean than the British Isles. Again, there is but little difference between the amounts of heat in the northern and southern parts of Germany. This is caused by the high land being in the south and the low land in the north. The winter cold is due to the lack of any mountain barrier in the north to check the cold northern winds.

The Rainfall is generally sufficient, and is sometimes excessive, causing serious floodings of the rivers.

FERTILITY OF SOIL.—The greater part of Germany is fertile, especially in the river valleys. A very small proportion is waste, barren soil, and this is situated in the Bavarian Plateau and along the Baltic coasts. The mountain slopes are extensively covered with forests, from which a large revenue is derived.

PRODUCTS—Agricultural.—1. Cereals—In order of production these are rye, oats, wheat, and barley.

2. Beetroot for sugar, and potatoes

3. The vine, hay, hops, and tobacco.

The vine is largely grown in the pleasant river valleys of the south, and consequently many districts in the Rhineland are noted for wine

Animal.—Germany has many wild animals, bears and wolves still exist in the forests

Mineral.—The minerals of Germany are varied, abundant, and widespread.

The chief are coal and iron, potassic salts, and zinc. Others are rock salt, copper, and lead

Coal.—The chief coalfields are those of the Ruhr Basin and of Saxony, and each of these districts is the seat of many manufacturing industries

Iron.—The chief iron-producing states are Westphalia, Rhenish Prussia, and Silesia

The Harz Mountains are celebrated for mineral ores, chiefly silver and copper

MANUFACTURES.—The manufactures of Germany are very important and occupy a large proportion of the inhabitants in many districts. The busiest manufacturing centres are near the coalfields of Saxony, Rhenish-Prussia, Silesia, and Würtemberg. The most important manufactures are—1 Iron and steel, 2 Woollen, 3 Silk, 4 Cotton

1 Iron and steel are manufactured chiefly in the Ruhr Basin, at the town of Essen, and in Saxony

2 Woollen goods at Barmen, Elberfeld, and Breslau

The wool from which the finest goods are produced is obtained from South America

3 Silk and velvet goods at Crefeld

4 Cotton goods at Chemnitz

COMMERCE.—After the union of all the German States into an Empire in 1870, German commerce grew very rapidly, and has extended to all parts of the world, entering into very keen competition with that of England

MEANS OF INTERNAL COMMUNICATION.—As in France, the rivers are very largely used in the transport of merchandise, and they are joined by important canals which connect the Rhine with the Rhone and Danube,

and the Elbe with the Oder and Vistula. Thus goods may be carried by canal and river from the North Sea to the Mediterranean and Black Seas.

FOREIGN TRADE —Imports.—Grain and flour, raw wool, raw cotton, cotton and woollen yarns, coffee, raw hides, and silk are the most important.

Exports—Sugar, coal and coke, woollen fabrics, mixed fabrics of silk and cotton, and leather goods are the most valuable.

SEAPORTS—Hamburg, Bremen, and Stettin are the three most important, but the amount of commerce carried on at Hamburg is more than twice the total of Bremen and Stettin, which are nearly equal.

Other ports nearly equal to each other in importance are Danzig, Kiel, Lubeck, and Königsberg. The North Sea ports have a great advantage over those of the Baltic in being open in winter while the latter are frozen.

The German ports are mostly at a considerable distance from the sea, and have not a sufficient depth of water for the large vessels of these days. Hence it has been necessary to create new ports nearer to the sea, which are looked upon as outports. Thus, Hamburg has Cuxhaven, Bremen has Bremerhaven; Stettin and Lubeck also have their outports.

Hamburg (930) is the most important commercial city in Germany, and is the fifth seaport of the world. Its situation at the mouth of the Elbe puts Hamburg into connection with the river and canal systems of Northern Germany, and hence great quantities of goods are transhipped at Hamburg and distributed through the country.

Bremen (246) has been for many centuries a place of great trade, and is now a remarkable example of a seaport which can only be reached by small vessels. The extensive trade belonging to Bremen is mostly carried on at Bremerhaven, which is near the sea, and has water deep enough for large vessels.

Stettin (236), at the mouth of the Oder, is conveniently situated for exporting the manufactured goods of Silesia and Berlin.

Danzig, now a free city, and Königsberg have a large summer traffic in timber and other forest products, and in grain.

Kiel, on Kiel Bay, is the chief German naval port, and is also of commercial importance. It is connected by canal with the North Sea, a route which saves the journey round the north of Denmark.

POLITICAL DIVISIONS—The German Federation of States consists of a number of Republics, each with its own President and Government. The most important are the old kingdoms of Prussia, Bavaria, Saxony and Wurtemberg.

Alsace-Lorraine, which formed part of the Empire, was restored to France by the Peace Treaty of 1919

INLAND TOWNS —Berlin (2,040) is situated on the Spree, a tributary of the Elbe, in the middle of the Great Plain. It is a city of very great importance, both as the capital of Prussia and as a manufacturing city. Like London and Paris and other capitals, the industries are numerous, the chief being machinery-making.

Munich (595), on the Bavarian Plateau, is the largest city in Southern Germany. This city is situated at the meeting of various railroads from other parts of the Empire, and of those which communicate with Italy by way of the Brenner Pass, and with Austria.

Breslau (511), on the Oder, in Silesia, has long been an important trading centre, and is also a very busy manufacturing city.

Leipzig (587), in Saxony, on a tributary of the Elbe, is a great commercial city, having famous fairs, where are sold vast quantities of books, furs, and woollen goods.

Cologne (516), on the Rhine, is chiefly famous from its connection with the scent which is manufactured there.

Dresden (546) is the capital of Saxony, and is famous for its fine buildings and its picture galleries.

Nuremberg (Nurnberg) is occupied with the manufacture of toys, and is the chief centre for the distribution of the wooden toys and wares made by the peasants of the Black Forest.

POPULATION (figures are according to the last Census) — Nearly 65 millions, or about 310 to the square mile, ranging from nearly 4,000 to the square mile in the State of the Free City of Hamburg (158 sq miles) to 87 in the Grand Duchy of Mecklenburg-Strelitz. Saxony, the most thickly peopled state, having over 800 to the square mile, has the densest population of any kingdom in Europe. This is owing to its numerous mining and manufacturing industries.

THE PEOPLE —Most of the people of the various German States are of Teutonic origin, and are descended from the tribes which proved so formidable to the Roman power in Italy and Gaul.

EXAMINATION PAPERS

- A** 1 State the position of the German mountains, name the chief ranges, and give some idea of their height,
2 Describe the climate of the Great Plain, and account for it
3 Draw a sketch-map of Germany, and insert the highlands and rivers
4 What are the chief manufactures in the province of Silesia, in Saxony and Bavaria, and the Rhenish Provinces?
- B** 1 Draw a sketch of the western boundary
2. Which of the rivers of Germany are commercially of most importance, and why?
3 Write what you can of the iron, sugar, and chemical manufactures of Germany
4 Name the chief imports and exports of Germany
- C** 1 Name and describe the three greatest seaports of Germany
2. Describe the relief of Germany, and show how the climate is affected thereby
3 What are the chief crops of Germany? Indicate in a general way where they are most cultivated
4. What industries are connected with Essen, Barmen, Breslau, Dresden, and Magdeburg?
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DENMARK

GENERAL DESCRIPTION.—Denmark consists of the low indented peninsula of Jutland, a number of islands lying between it and the west coast of Sweden, and of other adjacent islands. The chief of these are Seeland and Fyen (or Funen). The island of Bornholm, some distance to the east in the Baltic Sea, and the Faroe Islands, between the Shetlands and Iceland, also form parts of the Danish kingdom. Iceland, inhabited by Norse, and a large extent of land in Greenland, thinly inhabited, are subject to Denmark.

Jutland and the adjacent Danish islands form part of the Great Plain of Europe. The western coast of Jutland is bordered with sand-dunes and a strip of barren soil, but the eastern portion is fertile. The inhabitants are industrious, intelligent, and enterprising, and the natural resources of the country are well developed.

BOUNDARIES.—Jutland has the North Sea on the west:

the Skager Rack on the north; the Kattegat on the east. Seeland is separated from Sweden by the Sound.

SIZE—About 16,000 sq miles, including the Faroe Islands, which have an area of 514 sq miles

Thus Denmark is about the size of Bahawalpur State

COAST-LINE—Long fjords with low banks are numerous; the chief of the many straits are The Sound, between Seeland and Sweden; Great Belt, between Seeland and Fyen; Little Belt, between Fyen and Jutland; the most important cape is The Skaw, the northern point of Jutland.

RELIEF, RIVERS, &c.—The surface is generally flat and the rivers are small and unimportant

CLIMATE AND RAINFALL—The winters are long and cold, but the summers are warm enough to ripen wheat. The rainfall is sufficient

The soil is mostly fertile, and the greater part is well cultivated

PRODUCTS—1. *Agricultural*.—Oats, barley, rye, and wheat; potatoes and roots, including sugar-beet. Butter is produced in large quantities, and much is exported

2 *Minerals* are wanting, and Denmark has largely to import coal and metals

3 *Animals* of the ordinary domestic kind are reared, and many are exported.

INDUSTRIES.—The chief occupation of the Danes is agriculture, but home industries are carried on by many of the peasants, and there are some manufactures of woollens at Copenhagen.

TRADE—*Imports*—Manufactured goods of many kinds, sugar, timber, coal, and coffee. *Exports*—Almost entirely farm produce—butter, cattle, barley, wheat, and horses

TOWNS—Copenhagen (462), or with suburbs (559), the capital, is much the largest city in Denmark, having, with its suburbs, nearly ten times as many inhabitants as Aarhus, the next largest town. The city is well situated for commerce, is the first port, and possesses many fine buildings

Aarhus (62) is the largest town in Jutland and the chief centre of trade in the peninsula

POPULATION.—Over $4\frac{1}{2}$ millions, almost entirely of Teutonic race.

GOVERNMENT—A limited monarchy, with two Houses of Parliament called the Rigsdag.

FOREIGN POSSESSIONS

THE FAROE ISLANDS, like the Shetlands, are inhabited by a hardy race, who live by fishing, fowling, and sheep-rearing

ICELAND is a large volcanic island near the Arctic Circle. The chief volcano is Hekla. The people are remarkable for their education and intelligence. The capital is Reikjavik, a town of about 2,000 inhabitants. The chief exports are fish and sheep.

GREENLAND—The inhabited portion is on the west coast, where live about 10,000 people, whose chief pursuit is fishing.

EXAMINATION PAPER

- 1 Of what does Denmark consist? Give its boundaries and relative size
 - 2 Draw a map of Denmark, giving names of islands, openings, and straits
 - 3 What are the chief occupations of the Danes? Name the leading exports and imports
 - 4 Name the distant possessions of Denmark, with their positions, products, and any facts relating to the inhabitants
-

SWEDEN AND NORWAY

GENERAL DESCRIPTION.—Sweden and Norway together form Scandinavia, the largest peninsula in Europe.

Norway, the western portion, has a remarkably rugged coast-line, broken by many deep, long, and narrow openings called fjords. Sweden, the eastern and larger portion of the peninsula, slopes down to the Baltic Sea, and has a low coast-line bordered by a vast number of small islands. The surface of the peninsula is very high in the south-west and west, gradually decreases in elevation towards the north, and slopes gently to the east and south. The northerly latitude of the peninsula and its great elevation cause the climate to be cold and much of the surface to be incapable of cultivation. There are, however, considerable differences between the climate and fertility of Norway and Sweden, for the Gulf Stream Drift causes the fjords of Norway to be free from ice during the winter, while the Baltic is frost bound.

On the other hand, the summers are hot, and crops ripen freely on the extensive plain stretching towards the Baltic.

BOUNDARIES.—West, by the Atlantic and Arctic Oceans. East and south, by the Baltic Sea. The Russian frontier is formed mainly by the rivers Tornea and Tana.

SIZE.—The united area is nearly 300,000 sq. miles, or one and a quarter times the size of Burma.

COAST-LINE—The western coast is wonderfully broken by fjords, which run inland for many miles, with sides often formed of steep mountains descending directly into the water. Innumerable islands fringe both the western and eastern shores, of which the chief are the Lofoten Islands in the west, and Gottland and Oland in the Baltic.

The chief capes are The Naze, North Cape, and Nordkyn.

RELIEF.—The western part of the peninsula is a great plateau, upon which are many ridges and scattered mountains. The highest part of the plateau is in Norway, and different portions of the plateau are called fields, as Dovre Field and Ynes Field.

LOWLANDS.—The whole of the wide portion of Sweden is a plain, and the Baltic coast is bordered by low land.

In Norway the only low land is a narrow strip round the south coast.

RIVERS.—Numerous torrents leap down the sides of the western fjords, but there is only one large river in Norway—viz. the Glommen, which is 400 miles long, and flows from north to south. Numerous rivers of considerable length flow down the long transverse valleys towards the Baltic, generally forming long lakes in their course. The chief Swedish river is the Gota, which drains Lakes Wener and Wetter.

LAKES.—The lakes of Sweden form the second largest system in Europe. The largest are Wener and Wetter. Many others lie on the plain and in the long valleys that descend from the plateau.

CLIMATE AND RAINFALL.—The winter is long and cold, lasting seven months, but the Atlantic on the west is warmer than the Baltic, and hence the fjords are not frozen, while the coast of Sweden is blocked with ice for several months. The rainfall is abundant, especially in Norway. The summers are

hot, considering the latitude, and crops of corn ripen in a very short time.

FERTILITY OF SOIL.—The plateau is generally too high and bleak to be fertile, but Sweden contains much fertile soil. In Norway the hill-slopes are either clothed with forests or cultivated with grass and other crops, but particularly with grass which is made into hay.

PRODUCTS.—1. **Agricultural.**—Sweden and Norway : Oats, barley, rye, and potatoes are cultivated, with some little wheat and pulse, but the quantity produced is insufficient for the needs of the people, though Sweden exports some oats.

2. **Animal**—Sweden is able to export cattle and sheep, but Norway has to import live animals

3. **Forest Products.**—Timber, tar and pitch, resin and turpentine are very valuable. The chief trees are the fir and pine.

4. **Fisheries.**—The Norwegian fisheries are especially valuable, and help to make up for the poverty of the soil. The chief are cod, herring, and whale. The capture, curing, and preparation of these fish and their products give employment to many of the inhabitants.

5. **Minerals** are plentiful in Sweden, but of little importance in Norway.

The chief is iron, which is remarkable for its excellent quality.

MANUFACTURES.—These are chiefly the preparation for the market of the raw products of the country. The abundance of wood accounts for the large timber mills and the manufacture of matches. Wood is also pulped to make paper and cardboard. Wooden ships are built in Norway. The iron of Sweden is smelted, and excellent steel is made. Another important industry in Sweden is the manufacture of butter

Textile manufactures are inconsiderable in Norway, but an increasing quantity of raw cotton is imported into Sweden for manufacture

TRADE.—Norway and Sweden, but especially Norway, possess large numbers of merchant vessels, and do a great carrying trade.

MEANS OF INTERNAL COMMUNICATION—Conveyance of passengers and merchandise is much easier in Sweden than in Norway. In Sweden the rivers and lakes are often navigable, and are connected by very

useful canals There are also 7,600 miles of railway The chief canal is the Gota Canal, which joins the River Gota with Lakes Wener and Wetter and the Baltic

Norway has about 1,500 miles of railway, but the chief mode of passing from place to place is by the fjords, on whose banks stand nearly all the towns

Imports—Both countries import rye and other grain, manufactured goods, as woollens and machinery, coal, and tropical produce. In addition, Sweden receives raw cotton.

Exports—Sweden—Timber, iron, live animals, butter, oats, matches. Norway—Timber, cod, herrings, and train oil.

It will be noticed that Norway exports the products of its forests and fisheries, while Sweden, in addition to forest products, exports produce of its mines, farms, and factories.

SEAPORTS.—The chief ports in **SWEDEN** are Gothenburg, Stockholm, and Malmo. In **NORWAY**, Christiania and Bergen are the chief, but every town of any importance is a seaport.

TOWNS IN SWEDEN—Stockholm (351), the largest city in Scandinavia, stands at the entrance of Lake Malar, and, being built upon islands, bears some resemblance to Venice It is the capital of Sweden, and is both a manufacturing city and a seaport

Gothenburg (or Goteborg) (174) is the chief seaport of Sweden, and has important manufactures

Malmo is well situated for traffic with Germany

TOWNS IN NORWAY—Christiania (242) is the capital and by far the largest town It is a well-built city, with many fine and interesting buildings

Bergen (77) is the chief fishing-port, and has a great export of dried fish and fish products, such as cod-liver and train oil

Trondhjem, on the fjord of that name, is the ancient capital

Hammerfest is a small town within the Arctic Circle, visited by tourists to see the 'Midnight Sun'

POPULATION—Sweden, 5,500,000, Norway, 2,390,000.

THE PEOPLE are purely Teutonic, with the exception of less than fifty thousand Finns and Lapps

GOVERNMENT—Norway and Sweden were under one king from 1814 until 1905. In that year the union was dissolved, and each country has now an entirely separate government. Each is a limited monarchy, consisting of the sovereign and two Houses of Parliament The Parliament of Sweden is called the Diet, that of Norway the Storting.

EXAMINATION PAPERS

- A. 1. State the position and boundaries of Scandinavia
 2. Describe the coast-line of Norway and Sweden, naming the islands and openings
 3. Describe the river system of Scandinavia, and name the chief rivers
 4. Give some account of Stockholm, Christiania, Bergen, Gothenburg, Hammerfest, and Malmo
- B. 1. Name the natural products of Norway and Sweden, and point out any that are common to both countries or peculiar to either
 2. Say what you can of the manufacturing industries of Scandinavia
 3. State the population of Sweden and Norway, pointing out where the bulk of the people live in each country Name the races of people, and indicate any points of their character.
 4. Name the imports and exports of Sweden and Norway, and give reasons for any differences
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RUSSIA

GENERAL DESCRIPTION.—Russia is a vast country, which occupies more than one-half of the surface of Europe, and forms the main portion of the Great European Plain, which extends from the Ural Mountains to the north-eastern border of France. The coast-line is in four detached portions, forming the shores of as many seas. One of these, the Caspian Sea is a salt lake, with its surface much below the level of the ocean. The chief natural feature of Russia is its system of great rivers, which mostly rise at a low elevation, and flow long distances across the plains. The rivers, being navigable, to some extent make up for the deficiency of coast-line, but they suffer from being frozen in winter. Much of the soil is fertile, but there are large barren tracts in the extreme north and in the south-east, where very little vegetation can exist, and the population is, consequently, scanty.

BOUNDARIES.—1. On the north.—The Arctic Ocean, which is frozen for one-half of each year.

2. Or the south.—The Black and Caspian Seas, and a tributary of the R. Kur

3. On the east.—The Ural Mountains for part of the distance

4. On the west.—The Baltic Sea and R. Pruth.

Artificial boundaries separate Russia from Germany, Austria, and Hungary in the west, while Russian territory is continuous in Europe and Asia on the East

SIZE.—European Russia, nearly 2,000,000 sq. miles. (Compare with Indian Empire.)

European Russia is less than one-third the size of Asiatic Russia.

COAST-LINE.—The coasts are broken by many openings, more especially in the Arctic Ocean and Baltic Sea; but all are frozen during winter. In the Black Sea the northern coast is icebound for about eleven weeks each year, while in the White Sea the period is thirty-one weeks.

SEAS &c—The White Sea is the chief opening upon the northern coast.

In the Baltic Sea the principal parts are the Gulfs of Bothnia, Finland, and Riga.

The Sea of Azof is connected with the Black Sea by the Strait of Kertch.

The Caspian Sea is salt and very deep The Black Sea is less salt than the Mediterranean, but saltier than the Baltic, which is brackish All these seas are either entirely or nearly tideless

ISLANDS.—In the Arctic Ocean.—Nova Zembla is the largest of several large bleak islands to the north of Russia.

RELIEF.—The surface is very flat, with a slight slope outwards from the Valdai Hills towards the Arctic Ocean, Baltic, Black, and Caspian Seas.

MOUNTAINS—The highest mountains are the Caucasus in the south-east and the Urals in the east.

1. The Caucasus Range lies between the Black and Caspian Seas, and is remarkable for its steepness and great height The highest peak is Elburz (18,500 ft.) This range has very few passes, and is crossed with difficulty

2 The Ural Mts. form a very long range of only moderate height, the highest point being under 6,000 ft The range is remarkable for the gentle nature of the slope from east and west throughout most of its length, and is very easily crossed.

3. The Valdai Hills form a low plateau, and are important as being the source and watershed of many great rivers.

LOWLANDS.—Some remarkable districts in the vast plain of Russia are—1 The **Tundras**, the bleak, frozen plains bordering on the Arctic Ocean. 2. The **Black Earth Region**, in the southern half of Russia, remarkable for the depth and richness of the soil. 3. The **Steppes** of the south-east. Much of the surface of the steppes is below the sea-level, and abounds with small salt lakes, the soil being saline. This region is generally very barren.

RIVERS.—Russia is watered by many large rivers, which are frozen in winter, and are liable to flooding when the snow melts and to shrinking during the summer heat. The Great Plain is elevated to the south-east of Petrograd into the low Valdai Plateau, and a low ridge is continued eastwards towards the Ural Mts. In these elevations most of the rivers take their rise and flow outwards to the four bordering seas—the Arctic Ocean, and the Baltic, Black, and Caspian Seas. Hence the Russian rivers are easily placed in four groups.

(a) **Rivers Flowing into the Arctic Ocean.**—Petchora and Northern Dwina.

These streams flow through bleak and barren country with scanty population, and are of very little importance.

(b) **Rivers Flowing into the Baltic Sea**—Neva, Western Dwina, Niemen, and Vistula.

The Neva connects the great lakes with the sea, and has Petrograd upon its banks.

(c) **Rivers Flowing into the Black Sea**—Pruth, Dniester (700 m), and Dnieper (1,200 m).

The Don (1,100 m) flows into the sea of Azof. The navigation of the four last named is hindered by rapids and shallows.

(d) **Rivers Flowing into the Caspian Sea**—Volga (2,200 m) and Ural (1,150 m).

The Volga is 2,200 miles long, more than 400 miles longer than any other European river. It rises in the Valdai Plateau, and flows by a winding course into the Caspian Sea, forming a delta with very numerous mouths.

This river is a very important waterway, and is connected with the Neva at Petrograd by a canal. Many commercial and manufacturing cities are upon the banks of the Volga.

LAKES—There are two lake systems in Russia.

(a) **The Lake System of the Finland Plateau and the**

Russian Plain.—This includes the great lakes Ladoga, nearly 7,000 sq miles in area, and Onega, nearly half as large. These lakes, together with those of Finland, are of fresh water, and form the largest system of lakes in Europe.

(b) **The Salt Lakes of the South-east.**—Very numerous small salt lakes occupy the low-lying steppes to the north of the Caspian Sea.

CLIMATE AND RAINFALL.—Throughout Russia the winters are very cold and the summers hot. The country extends over about thirty degrees of latitude, and, consequently, the north is considerably colder than the south, but the difference in temperature is not so great as might be expected from the range of latitude. This is due to the absence of any high land to shelter the surface from the cold northern winds, and to the position of the country, so far from the influence of the Atlantic Ocean. The rainfall is not abundant, but it occurs during summer, when most beneficial. In winter the snowfall is heavy.

FERTILITY OF THE SOIL.—The soil of Russia varies very much in fertility. Large areas are occupied by the barren wastes of the north called **Tundras**; by swamps, and by the **Steppes** of the South-east. Forests cover about one-third of the surface, almost entirely in the northern half of the country. The most fertile part is the **Black Earth Region**, through which flow all the rivers between the Pruth and the Volga. Here the soil is exceedingly rich and deep, and produces abundant crops without manure. Altogether about one-fourth of the surface of Russia is fit for cultivation, and nearly an equal area is pasture.

PRODUCTS.—1 **Agricultural.**—The agricultural products are very varied. The most general crops are cereals—rye, oats, wheat, and barley.

In the south and south-west, the summer is warm enough to permit of the growth of flax, hemp, sugar-beet, tobacco, and the vine.

2 **Mineral.**—Russia has a great abundance of minerals of many kinds. The chief are coal, iron, gold, platinum, silver, zinc, and copper. Others of importance are mercury, salt, and petroleum.

Iron is worked on most of the coalfields, and the production is now very large.

Other districts rich in minerals are the Urals and the Caucasus, where gold, platinum, and copper are obtained. The Caucasus region is also rich in petroleum, from which kerosene or paraffin oil is extracted.

MANUFACTURES—The chief manufactures, in the order of their values, are cotton, woollen, iron, linen, and silk.

TRADE—The internal trade of Russia is very great, for there is an active interchange of the various products of the many European and Asiatic provinces. The external trade shows remarkable change and progress in the last twenty years.

MEANS OF INTERNAL COMMUNICATION.—Rivers are the chief natural means for the conveyance of passengers and goods in European Russia, and these are to some extent connected by canals. Thus, by the canal joining the Neva with the Volga, goods may be conveyed without transshipment from the Baltic to the Caspian Sea. Roads are bad throughout the greater part of Russia, owing to the absence of stone. Railways are not extensive in proportion to the size of the country, but are being developed. The river communication suffers from being frozen for many months in each year.

FOREIGN TRADE—Imports—Raw cotton, raw metals, with metal wares and machinery, tea, raw wool and yarn, and coal make up more than one-half of the total value of the imports.

Exports—Corn and flour, flax, timber, various articles of food, as fish, butter and eggs, linseed, petroleum, and hemp.

Manufactured goods, though relatively small in value, show a decided and steady increase. The export of petroleum and its products more than tripled in value between 1887 and 1901.

SEAPORTS.—The chief ports of Russia are Odessa, Petrograd, Riga, and Batum.

The bulk of the foreign commerce is carried on through the Baltic and Black Seas, for the White Sea is very remote and is frozen for over six months in the year, and the Caspian Sea is an inland lake.

The chief Baltic ports are Petrograd and Riga.

The chief Black Sea ports are Odessa and Batum.

The White Sea port is Archangel; and on the Caspian Sea are Baku and Astrakhan.

Odessa (620) is the chief outlet for the wheat produced in the Black Earth Region. It has the advantage of not being blocked by ice for so long a period as other Russian ports.

Petrograd (2,018) became an important port in 1885, when a deep canal was made through the shallow end of the Gulf of Finland.

Batum has developed largely in recent years through the great increase in the production and export of petroleum.

Baku and Batum are, strictly speaking, in Asiatic Russia.

TOWNS—Petrograd, upon the Neva, is the most important city in Russia. Many of the inhabitants make their home in Petrograd in winter and in the country in summer, and hence the population varies from 1,500,000 in summer to over 2,000,000 in winter [pre-war conditions]. This city was founded by Peter the Great in 1703, who chose the site because he wished the capital to be near the sea. It is also a great manufacturing and commercial city, with much foreign and internal trade.

Moscow (1,617), on the Moskwa, the ancient capital, has important manufactures, and is the centre of Russian railways. The city differs from Petrograd in having an Oriental appearance, with its numerous brightly coloured domes. The most remarkable building is the Kremlin.

Odessa (620) on the Black Sea, is the first port in Russia in value of imports and exports.

Riga (350), at the mouth of the Western Dwina, is an ancient seaport, with great export of the products of Western Russia, such as flax, timber, tar, and resin. Lodz, in Poland, has cotton and linen manufactures.

Helsingfors is the capital of Finland. Tiflis is a large town to the south of the Caucasus Mountains, on the great trade-route across that range by the Daniel Road or Pass.

THE PEOPLE—The population is estimated at over 120 millions, or about 64 to a square mile. All true Russians are Slavs, and these form the bulk of the people, but there are many other races, as Germans in the Baltic Provinces, Finns in Finland, Mongols (Tartars) in the Steppes, Jews in the west and south-west, and Caucasians in the south-east. The majority of the people belong to the Greek Christian Church.

FOREIGN POSSESSIONS—Russia possesses all Northern Asia from the Urals to the Pacific, extending southward to the confines of Persia, Afghanistan, and China, and comprising Siberia and Russian Central Asia. The total area of these possessions is $6\frac{1}{2}$ millions of square miles. Russian

territory also extends to the south of the Caucasus into Asia, including provinces which formerly belonged to Turkey

POLAND

GENERAL DESCRIPTION—The country of Poland has been restored to its former position of independence as a result of the war. It is now an independent Republic. Polish territory has been detached from Russia, Germany, and Austria for this purpose, and the new State has an area of about 300,000 sq. m. with a population of about 30 millions.

Poland is rich in coal and iron, and has important manufacturing industries. Its port is Dantzic, through which Polish manufactures will find a passage to foreign markets. The capital is Warsaw (872), a city of great importance, both industrially and historically. Its chief manufactures are woollen and silk goods. Other important towns are Lodz (415), Cracow (154), Posen (156).

EXAMINATION PAPERS

- A 1 Name the boundaries of the Russian Empire, and indicate where the frontier is artificial.
- 2 Name the mountain ranges of Russia, show their relative heights, and compare with other mountain ranges, as the Alps or Pyrenees.
- 3 Say what you can of Petrograd, Moscow, Odessa, Warsaw, and Tiflis.
- 4 Describe the lake systems of Russia, showing their points of difference. Name the largest lakes.
- B 1 Describe the coasts of Russia, and state any of their disadvantages.
- 2 Name the rivers in their various systems, and describe the Volga.
3. Name the chief agricultural products of Russia, and indicate as far as possible where they grow most freely.
4. State the imports and exports, state which are increasing or diminishing, and show why.
- C 1 Show the position of the chief waterpartings of Russia, and name the most important rivers flowing from each.
2. Name the chief minerals and state the chief mineral-producing districts.

- 3 Compare the various parts of the Russian Empire as to climate, products, and density of population
 - 4 Say what you can of the Steppes, the Black Earth Region, the Tundras.
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AUSTRIA AND HUNGARY

GENERAL DESCRIPTION.—As a result of the Great War the Austrian Empire was broken up and other States were carved out of her territories. Hungary broke away and is now an independent country. The eastern part of Austria lies in the upper Danube valley, and contains much fertile soil. The western part is mountainous, and the country rises to the Tyrol mountains.

The whole area is about that of the Central Provinces.

BOUNDARIES—Austria and Hungary have many natural boundaries. On the west, the Alps; on the south, the Rivers Drave and Danube; and for a short distance on the north-east, the Carpathians. In the north and east the boundaries are artificial.

RELIEF.—Austria and Hungary consist of a great inland plain surrounded by mountain ranges. Austria extends westwards into the Alpine region.

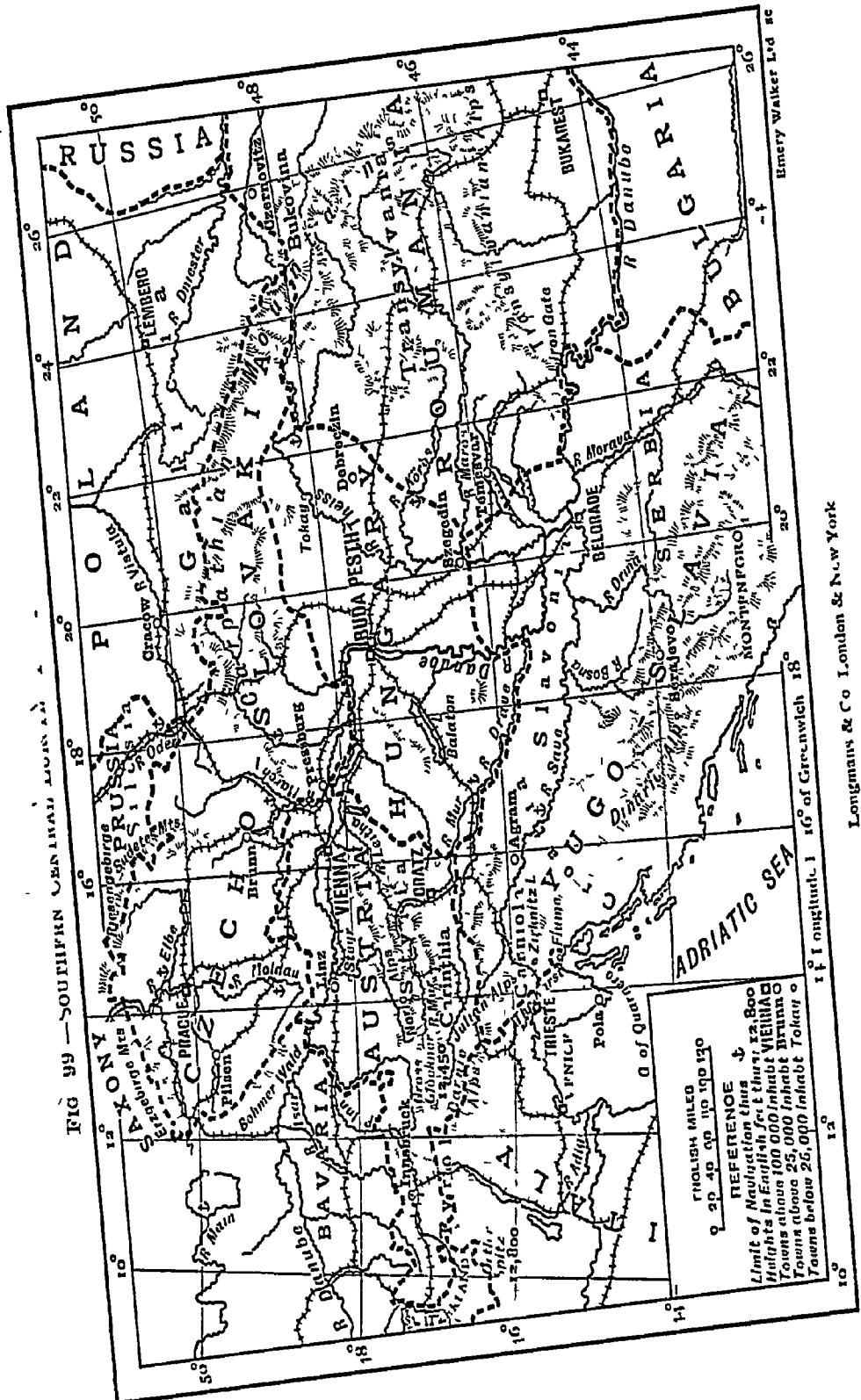
MOUNTAINS—The mountains are in three systems.

1. The Alps, in the west, are a continuation of the Swiss mountains. The Julian Alps, which extend to the south-east, connect the Alpine with the Balkan mountain systems. The Alps gradually diminish in height as they approach the Hungarian plain, and as they stretch towards the Balkans.

2. The Carpathians describe a great curve, about 1,000 miles in length. These mountains are very steep and rugged, but much less in height than the Alps, the highest point being under 9,000 ft, and the average height about 6,000 ft.

RIVERS—One large and important river drains Austria and Hungary. The country does not possess the mouth of one navigable stream, or access to the sea.

The Danube (1,700 m long) flows through Southern Germany, Austria and Hungary, and then separates Roumania on the north from Bulgaria on



the south. This river receives very many tributaries, several of which are themselves large streams—e.g. the Save and Theiss. The Danube is navigable for many hundreds of miles; but its banks are swampy, more especially in Hungary and in its lower course, and therefore comparatively few large towns are built on it below Buda-Pesth. The most remarkable part of its course is where, on leaving Austria, the river flows for over seventy miles through a defile caused by the approach of two mountain ranges, the Balkans and Carpathians. Here the stream is narrow and shallow, but has been deepened at great cost.

Some of the largest towns on the Danube in Austria are **Linz**, an important trade centre; **Vienna**, the capital and largest city in the empire; and **Buda-Pesth**, the capital of Hungary. On tributaries are **Innsbruck**, on the **Inn**, an important town in the **Tyrol**; and **Gratz**, on the **Mur**, the largest town in the Alpine provinces.

LAKES—The largest lake in Austria and Hungary is **Balaton**, west of the Danube, in the Hungarian Plain.

CLIMATE AND RAINFALL—In such large countries as Austria and Hungary, with so much diversity of surface, there is naturally considerable variety of climate; but, generally speaking, the winters are cold and the summers are warm.

The heat of summer is accounted for by—

1. The latitude, from about 45° S. to 50° S.
2. The country is near enough to Africa to come under the influence of hot winds.

The severity of the winter is produced by—

1. The cold winds from east and north, which find an easy entrance over the eastern and northern mountains and sweep over the great plains.
2. The elevation of the surface of some of the country.

The rainfall is unevenly distributed, being plentiful among the mountains but scanty on the plains.

FERTILITY OF SOIL—The soil is fertile, especially in the great river valleys. About nine tenths of the surface is either cultivated land, pasture, or woodland. In the great plains of Hungary are large tracts which produce only pasture, and suffer much from summer drought and winter frosts.

The Alpine regions of the **Tyrol** contain the largest proportion of quite unproductive surface.

PRODUCTS —Agricultural —1 Cereals · Oats, rye, barley, and wheat.

Hungary is especially noted for the production of hard wheat, which makes very fine flour and is in great demand

2 Potatoes, sugar-beet, hops, and maize are important crops.

3. The vine is grown on the sunny hill-slopes of the Alpine regions and in Hungary.

4 Timber is a very valuable product, its cultivation being carefully fostered by the Government The great forests are upon the Alps

Mineral.—Austria and Hungary are rich in minerals. Coal—including common coal and brown coal—iron, lead, silver, and zinc

The greater part of the mineral wealth is found in Austria

MANUFACTURES —The great bulk of the manufacturing industries is carried on in Austria Hungary is almost entirely agricultural or pastoral

The chief manufacturing towns are Vienna, where a variety of goods is produced—viz silks, machinery, porcelain, and fancy goods generally, Gratz, non manufactures, Buda-Pesth, silks, velvets, and flour

TRADE —The foreign trade, although showing a large increase in the last twenty years up to 1914, is small compared with that of some other European countries

MEANS OF INTERNAL COMMUNICATION —Speaking generally, the means of communication throughout both Austria and Hungary are capable of considerable improvement As in Germany and France, the rivers afford convenient means for the carriage of passengers and goods, the chief navigable stream being the Danube

Railways are numerous and convenient in the great manufacturing provinces, but they are lacking in Hungary, where large tracts of country are remote from railways

TRADE —The chief imports are raw materials for manufacture—cotton, wool, hides, silk, and coal, machinery, and tropical produce

The exports consist mainly of the products of forests and farms—wood and woodwork, cattle, eggs, and sugar

The trade is maintained chiefly with the adjoining countries

DIVISIONS — The provinces Austria and Hungary are divided into Cis-Leithan and Trans-Leithan States. This name is derived from the Leitha, a tributary on the right bank of the Danube, to the east of Vienna. The Cis-Leithan States (*cis*, on this side of) are those on the west of the Leitha, the Trans-Leithan States are those on the east of that river.

TOWNS.—**Cis-Leithan Provinces** —As these provinces carry on the chief manufacturing industries, there are more very large towns than in Hungary.

Vienna (2,100), the capital of Austria, is the fourth city of Europe in population. It is well situated upon the Danube, by which great trade is carried on. It is also at the meeting of the trade routes from Silesia and Italy. Like Paris, the city is the centre of many manufactures, including silks, machinery, and fancy wares of many kinds.

Graz (150), in Styria, is the largest town in the Alpine provinces.

Lenz (70,000), a manufacturing town on the River Danube.

Trans-Leithan Provinces — **Buda-Pesth** (833), upon the Danube, Buda being on the right and Pesth on the left bank. Buda is an old German town, while Pesth, a Magyar town, has a very different appearance. Fine bridges connect the two towns, which are great centres of trade and the chief seat of manufactures in Hungary, the most important being silk, velvet, and flour. The united towns form the capital of Hungary.

PEOPLE —The population of the former Austria was over 28 millions (part of the population of Austria is now included in the new Czecho-Slovak State), of Hungary 21 millions—total, 49 millions, or 180 to a square mile.

CZECHO-SLOVAKIA

This country, inhabited by Slav people, was formed at the termination of the Great War. Most of its territory belonged to the former Austrian Empire, that broke into pieces as a consequence of the war.

BOUNDARIES —In the west, by the Erzgebirge Mts, and Bohmer Wald, in the south, by Austria and Hungary, in the north and east it is separated from Russia and Poland by the Carpathian Mountains

POLITICAL FEATURES —The country is peopled, as implied by its name, by the Czechs and Slovaks. The country is rich in minerals such as coal and iron, and has large manufacturing industries

AREA —54,000 sq miles

POPULATION.—About 13 millions

The capital is Prague (500), on the Moldau, a tributary of the Elbe, and the centre of woollen, cotton, glass, and porcelain industries

Brunn (128), is also a town of considerable importance

YUGO-SLAVIA

GENERAL DESCRIPTION —This country was formed out of a southern part of the former Austrian Empire, consisting of the States of Bosnia and Herzegovina, together with Serbia and Montenegro. It touches Austria and Hungary on the north, and is bounded by the Adriatic Sea on the south. The capital is Belgrade. Zagreb (Agram) is a university city on the River Save. The mountainous part of the country, especially the north-west, is rich in minerals, the principal products being coal, iron, quicksilver, and salt.

AREA.—About 80,000 sq miles

POPULATION —About 11 millions

The plain-lands of Yugo Slavia are fertile, and watered by many streams flowing into the Save. The chief vegetable products are timber (forests cover a large part of the surface), maize, wheat, plums (dried for export), and grapes. Serajevo is another important town.

Belgrade (91), the chief town of Serbia, is the centre of an agricultural district at the confluence of the Save and Danube.

EXAMINATION PAPERS

- A 1 Name the countries touching Austria and Hungary, with the boundaries, indicating where the boundary is artificial
- 2 Describe the position of the Austrian Alps and Carpathians; name the different parts of these systems; compare the average heights and name the highest peaks
- 3 Name the chief manufacturing towns in Austria and the industries specially carried on in each Give any reasons for the manufactures being located in these districts
- 4 Name the rivers of Jugo Slavia, and give an account of the Danube, naming the countries drained by it, the causes of obstructions in its course, and the chief towns on the banks of the main stream or tributaries
- B 1. Say what you know of the soil of Austria and Hungary, and name the chief vegetable products
- 2 Compare and contrast Austria and Hungary with Germany.
- 3 Compare the Czecho-Slovakia and Jugo Slavia States.

SWITZERLAND

GENERAL DESCRIPTION. — Switzerland occupies the middle and highest portion of the mountainous core of Europe, its surface being almost covered with the Central Alps The mountainous character of the country—its lakes, its snow-capped peaks, its glaciers, and its waterfalls—render the scenery of Switzerland among the most beautiful in the world, and it is visited by thousands of tourists annually It is on this account called the 'playground of Europe' It is surrounded by four great countries—France, Germany, Austria and Hungary and Italy

FIG 100.—SWITZERLAND PHYSICAL AND POLITICAL



Waller & Sonnet

Longmans & Co. London & New York.

—whose plains are fertilised by the abundant streams which are formed by the melting of the snows and glaciers on the Swiss mountains.

SIZE.—Nearly 16,000 sq. miles in area, or about two-thirds the size of Ceylon.

RELIEF—Along the western border lie the parallel ranges of the Jura mountain system, south-east of a line between L. Geneva and L. Constance lies the great Alpine system.

FIG 101—SWITZERLAND RELIEF



Between these two lies the Swiss Plateau, which is in many places hilly on account of spurs from the Jura and Alps.

The Swiss Plateau covers less than one-third of the surface, but has the majority of the inhabitants and nearly all the soil capable of producing such crops as corn

RIVERS AND LAKES.—Switzerland is watered by a large number of streams, which form the headwaters of important rivers.

The Rhine rises in Mount St Gothard, and, passing through Lake Constance, is joined by the Aar, which drains Lakes Zurich, Lucerne, and Neuchâtel

The Rhone also rises in Mount St Gothard, and, flowing through a deep valley between the Bernese and Pennine Alps, passes through Lake Geneva and enters France

The Po is mainly the product of streams which rise in Switzerland and, flowing through transverse valleys, enter the Italian plains

The Inn drains a considerable portion of Eastern Switzerland, and joins the Danube in Austria

CLIMATE AND RAINFALL.—Switzerland has severe winters owing to the great elevation of most of the surface, with very great snowfalls. The summers are generally short, but very hot in the lower valleys, while the atmosphere in the higher portions is then remarkably bracing and fresh. The rainfall is generally abundant.

FERTILITY OF SOIL—Generally speaking, the soil of Switzerland is not fertile, and has only been made productive by the industry of the people. Only about a quarter of the surface is under crops, half under grass and forest, and the remainder consists of unproductive mountain tops

PRODUCTS.—1. *Agricultural.*—Hay; oats, wheat, and rye; grapes and tobacco. The cereals produced are not nearly sufficient for the support of the people, and much has to be imported.

2. *Animal.*—Cattle, goats, swine, and sheep.

Large quantities of cheese and condensed milk are made and exported.

MANUFACTURES.—The leading manufactures are silk, cotton, machinery, watchmaking, cheese, and wine.

Silk, spinning and weaving, chiefly at Zurich and Bâle

Cotton, chiefly at Zurich. Swiss cotton yarns are remarkable for fineness

Watchmaking—Mostly in the valleys of the Jura. Geneva is the chief place from which the watches are exported, and hence they are known as Geneva watches

Switzerland may be said to have an 'industry of hotels,' so large is the number of these institutions for the convenience of tourists, and of the people employed in their up-keep

MEANS OF INTERNAL COMMUNICATION—Swiss roads and railways are a great example of the triumph of human skill and energy over natural obstacles. During the nineteenth century, excellent carriage roads were made over the chief passes, and in recent years communication with Southern Europe has been made easy by the construction of the great railway tunnel through Mount St Gothard.

IMPORTS.—The chief are raw materials, as silk, cotton, and wool; grain; metals, minerals, and machinery

EXPORTS.—Manufactured products, silk and cotton fabrics, watches, condensed milk, and cheese.

DISTRICTS AND TOWNS.—The twenty-two divisions are called cantons. The chief towns are —

Zurich—This town has very extensive suburbs, which make the total population 189,000 though the town itself has less than 30,000. It is the chief town in German Switzerland, and is famous for its commerce and educational establishments

Geneva (125), on the south-western end of Lake Geneva, is a handsome busy city

Bâle (132), situated on the Rhine, where it turns northward, a busy manufacturing town with much trade

Bern (85), on the River Aar, the political capital of the Republic.

POPULATION.—Nearly 3,781,000, or 234 to a square mile.

THE PEOPLE AND LANGUAGE—There is, properly speaking, no separate Swiss language, and the people are made up of a German-speaking race who form the majority and occupy the plateau, and French- and Italian-speaking peoples, who live in the south and west

GOVERNMENT.—A Federal Republic, with two elected Houses called the State and National Councils

Each canton is independent in the control of its local affairs

EXAMINATION PAPERS

- A 1 Describe the relief of Switzerland
- 2 Name the natural products of Switzerland, indicating those that are insufficient in quantity
- 3 Mention the principal imports and exports, and name the chief countries engaged in trade with Switzerland
- 4 Write what you can of Zurich, Bâle, Geneva, Bern, Lucerne, Neuchâtel
- B 1 Name three important rivers whose sources are in Switzerland, indicate where they rise; name any tributaries, and show direction
- 2 Say what you can of the Jura Mountains, their position, direction, height, formation, and occupation of the inhabitants
- 3 Name the manufactures of Switzerland, name districts and towns where they are carried on, and give any interesting facts concerning them
- 4 Give an account of the Alpine system, stating position, direction, height, names of divisions and ranges, and four well-known peaks.

SPAIN AND PORTUGAL

GENERAL DESCRIPTION.—Spain and Portugal make up the Iberian Peninsula, which is effectually cut off from the rest of Europe by the Pyrenees Mountains. It corresponds in position to Arabia, the peninsula at the south-west of Asia. Like Arabia, the greater part of its surface forms a tableland, but whereas the surface of Arabia is more or less uniform in elevation, Iberia is divided into distinct portions by mountain ridges called *sierras*, lying almost parallel with each other across the country from east to west. The slope of the tableland is generally to the west, and, as the chief watershed is nearer to the east than to the west coast, the long rivers nearly all flow to the Atlantic Ocean. The elevation of most of its surface causes the Peninsula to have colder winters than other countries in the same latitudes, and, as the bordering mountain chains receive most of the rain, the interior of the country also suffers from drought, and the rivers vary very much in volume at different seasons. The natural resources of the country, especially in mineral wealth, are great, but have been much neglected. Steady progress is now being made in developing the soil, the mines and manufactures.

BOUNDARIES.—The Iberian Peninsula has natural boundaries. The short land boundary consists of the Pyrenees Mountains with high and difficult passes and easy means of communication only round the ends of the range. On all other sides the peninsula is bounded by the sea.

The Strait of Gibraltar is only thirteen miles wide in its narrowest part and is guarded by the two great promontories Gibraltar and Ceuta on opposite sides, which were called by the ancients *The Pillars of Hercules*. Gibraltar is a fortress of immense strength, which has been held by the British since 1704.

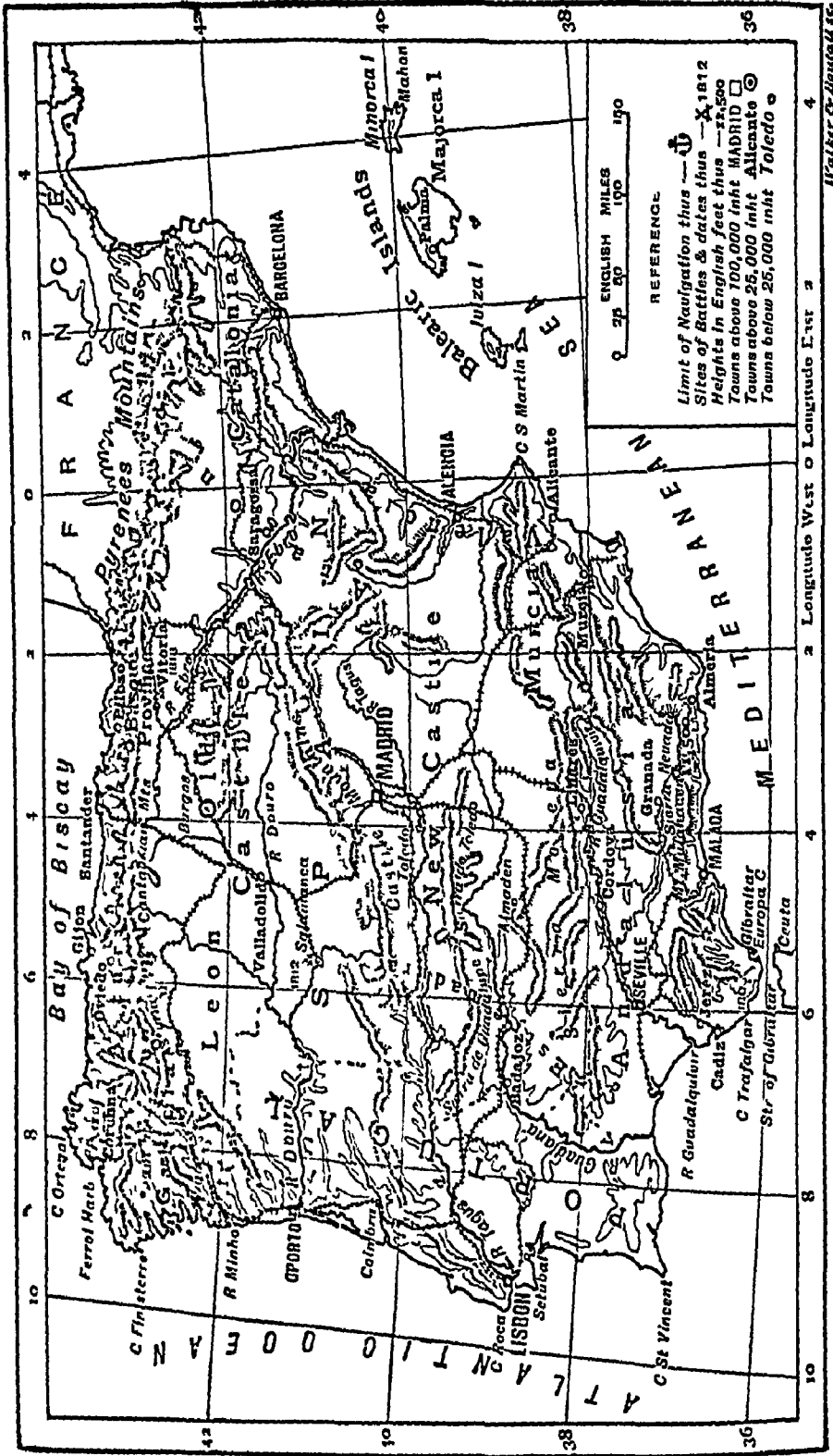
SIZE.—Spain, nearly 200,000 sq. miles. Portugal, 34,000 sq. miles. (Compare with Burma.)

COAST-LINE.—Except in the north and north-west, the coast is very little broken, and consists of long stretches of low-land lying between headlands. The openings in the north-west somewhat resemble fjords.

The lack of great openings is a disadvantage to the Peninsula in commerce.

CAPES.—Ortega in the north. Finisterre (Land's End) in the

FIG 102.—SPAIN AND PORTUGAL. PHYSICAL AND POLITICAL.



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Walker & Dunsford & Co.

north-west. Roca, the most westerly point. St. Vincent in the south-west. Trafalgar in the south. Europa on Gibraltar.

ISLANDS.—Balearic Islands in the Mediterranean; the chief are Majorca, Minorca, and Iviza.

RELIEF—The great plateau covers almost the whole surface, and the general slope is to the west. The only extensive valleys are those of the rivers—the Ebro in the north-east, the Guadalquivir in the south, and the Tagus and Guadiana in the south-west.

MOUNTAINS—1. Northern Mountains.—The Pyrenees, continued along the north coast in the Asturias Range.

The Pyrenees somewhat resemble the Caucasus in being high and steep with few passes. The greatest elevation is over 11,000 ft.

2. Mountains of the Plateau.—The ranges are called Sierras, from the resemblance of a line of peaks to a saw.

From north to south the chief sierras are the Castile System, which lies across the middle of the country, and extends into Portugal. Sierra de Toledo and Sierra de Guadeloupe, which separate the valley of the Tagus from that of the Guadiana. Sierra Morena, forming the southern edge of the plateau.

3. Southern Mountains—Sierra Nevada, or snowy range, higher even than the Pyrenees, the highest peak being 11,500 ft.

RIVERS.—The Spanish Peninsula is not well watered. The rivers vary very much in volume at different seasons, and often flow between banks too steep to admit of the water being used in the making of canals, either for commerce or for irrigation.

The rivers flowing into the Atlantic Ocean are the Minho Douro (460 m), Tagus (510 m), Guadiana (450 m), Guadalquivir. The only river of importance flowing into the Mediterranean Sea the Ebro (420 m).

The Guadalquivir and the Ebro are the only rivers which can be ascended by vessels for any considerable distance, and these two rivers are also used in irrigating large tracts of country.

CLIMATE AND RAINFALL—Spain extends southwards to 36° N. lat., and therefore the summer heat is considerable; but, owing chiefly to the elevation of the surface, the winter is remarkably severe over most of the Peninsula. Rain is abun-

dant in the north and west, but the country generally suffers from drought

FERTILITY OF SOIL.—Where the rainfall is sufficient, the soil is very productive. In the south and east the soil in places is made fertile by irrigation. On the plateau the dryness of the climate accounts for the barrenness of the soil, and very large areas are covered only with scanty grass.

In Portugal the surface is rugged, and a considerable portion is unproductive.

PRODUCTS—1. *Agricultural.*—As in France, the vine is the most valuable product, grapes, raisins, and wine being exported in large quantities, and as in other Mediterranean lands many kinds of fruit are grown, the most important being oranges, figs, and olives.

Field crops are not so important—and wheat has to be imported. The chief crops grown are wheat, maize, and rye. Cork, the bark of a species of oak which is found all over the peninsula, is one of the chief resources.

2. *Animal.*—The Merino Sheep is extensively reared on account of the fine texture of its wool. Mules and asses are the chief beasts of burden on the mountains. The silkworm supplies raw silk

3. *Mineral.*—The peninsula is very rich in minerals. Coal and iron are found in the Cantabrian Mountains, and the Rio Tinto mines in the Sierra Morena supply one quarter of the world's copper. Lead is mined in the Sierra Nevada, and the quicksilver mines of Almaden have long been famous.

MANUFACTURES—Manufacturing industries occupy only a small proportion of the inhabitants of Spain and Portugal, but the quantity of goods manufactured in Spain is steadily growing

The almost universal manufacture is wine. Two districts are especially noted for wine production.—1 The neighbourhood of Seville in Southern Spain, where sherry is produced and takes its name from the town of Jerez. 2. The district near Oporto in Portugal, where port wine is largely produced.

Other manufactures in Spain are iron, cotton, and silk.

Portugal, in addition to wine, manufactures salt and corks.

TRADE.—An active and increasing trade is carried on in

the coast provinces; but the thinness of the population in the interior and the difficulties of communication cause the internal trade to be relatively small. The commerce consists of the interchange of the products of mines, forests, vineyards, and gardens for raw cotton, manufactured textile and metal goods, articles of food such as wheat, and tropical produce.

MEANS OF INTERNAL COMMUNICATION—The rivers are of but little use in commerce, and canals are very few. Roads are bad in Spain and Portugal, and the coasts are lacking in deep inlets. The railway system is not extensive, but is growing. Much of the internal trade is still upon mules' backs on the rough roads of the mountain districts.

FOREIGN TRADE.—SPAIN—Imports.—Raw cotton and cotton goods, coal, timber (especially for making casks), woollen goods, iron goods and machinery, wheat, sugar, and fish.

Exports.—Wine, minerals, and metals—viz. iron, copper, lead, zinc, and quicksilver—fruits and cork.

PORTUGAL—Imports—Wheat, woollen goods, machinery, iron, and coal.

Exports.—Wine, cork, fish, and copper.

SEAPORTS —SPAIN—Barcelona (560), Valencia (233), Seville (155), Malaga (133), Bilbao (92).

Barcelona is the chief seaport of Spain, with a large import of raw cotton for manufacture.

Valencia, Seville, and Malaga export fruit and wine.

Bilbao extensively exports iron ores, especially to South Wales.

PORTUGAL—The chief ports of Portugal are Oporto (194) and Lisbon (435).

Oporto, at the mouth of the Douro, is the outlet for the produce of the most thickly peopled district in the Spanish Peninsula. It is especially famous for the export of port wine.

Lisbon, upon the estuary of the Tagus, is splendidly situated and has much trade.

TOWNS.—SPAIN.

Madrid (571), the capital of Spain, is situated upon the plateau at a greater elevation than any other European capital. It stands upon the R. Manzanares, which is very variable in volume and of no use for commerce. The city has an unpleasant climate owing to its great extremes of heat and cold, and is only important as the capital.

Barcelona (560) is the chief manufacturing city of Spain and the first seaport. An important and growing manufacture of cotton goods is carried on, and large quantities of nuts and fruits are exported.

Valencia (233) and **Murcia** manufacture silk goods. These towns and **Alicante** are also seaports with considerable export of fruit.

Seville (155) is a very ancient city, with thriving trade in wine and fruit, and has manufactures of iron and silk.

Malaga (133) is a seaport with much trade, especially the export of fruit. **Granada** is famous for its Moorish remains, especially the palace called the **Alhambra**, and was the last fortress held by the Moors in Spain.

Cadiz is an ancient seaport, with a good roadstead but a poor harbour. **Jerez** has a very great export of sherry wine. **Bilbao** has manufactures of iron and a great export of iron ore.

Valladolid is the chief place of internal trade in Northern Spain.

Toledo was once known throughout the civilised world for its manufacture of sword-blades, and still carries on the industry. **Almaden** is well known for its nearness to the famous quicksilver mines.

The **Balearic Islands** consist of three large islands—**Majorca**, **Minorca**, and **Iviza**—and a number of smaller ones, with a total area of nearly 1,900 sq. miles. They are very populous, and produce much fruit and olives.

The **Canary Islands** lie off the West Coast of Africa, and have an area of over 2,800 sq. miles. The chief islands are **Teneriffe** and **Grand Canary**.

Teneriffe is famous for its great volcanic peak rising from the Atlantic to a height of 12,000 ft.

The chief town is **Santa Cruz**. These islands are much visited by English people in search of health, the climate being very delightful.

TOWNS.—PORTUGAL.

Lisbon (435) is the capital of Portugal and has considerable trade. The city was destroyed by an earthquake in 1755, and most of the present buildings are quite modern.

Oporto (194) *See* Seaports.

The **Azores** lie far out in the Atlantic, and afford a convenient refuge for disabled vessels. The chief island is **St. Michael**, famous for its oranges.

The **Madeira Islands** are off the coast of Africa, north of the Canaries. The chief town is **Funchal**, a calling station for mail and other vessels.

POPULATION—Spain, 19 millions, Portugal, nearly 6 millions.

Portugal is considerably more densely peopled than Spain.

THE PEOPLE are the result of a mixture of races. Celtic, Latin, Teutonic, and Moorish peoples have in turn invaded and possessed the whole or parts of the Peninsula. The earliest known inhabitants are the Iberians, whose

direct descendants, the Basques, still inhabit the northern provinces, and are the only pure race in Spain

GOVERNMENT—Limited monarchy in each country, with two Houses of Parliament, known as the Cortes

FOREIGN POSSESSIONS—Portugal has great foreign possessions In Africa, Cape Verde Islands, Portuguese West Africa, a vast district between the Rivers Congo and Cunene, and East Africa, another great province between Zululand and the R. Rovuma In Asia, Goa in India, part of Timor in the Malay Archipelago, and Macao in China

SPAIN has in Africa, Fernando Po and various other settlements on the West Coast

The Rock of Gibraltar, a promontory near the most southerly point of Spain, with an area of nearly 2 sq miles and an elevation of over 1,400 ft, has been in British possession since 1704, and is governed as a Crown Colony. The population is about 27,000, of which over 5,000 form the garrison.

The nearest point of Africa is only 13 miles distant, so that Gibraltar commands the entrance to the Mediterranean.

EXAMINATION PAPERS

- A**
- 1 State the size and give position and boundaries of Spain and Portugal
 - 2 Give an account of the river system of the Iberian Peninsula, showing general direction and peculiarities, and name the chief streams.
 - 3 State the vegetable, animal, and mineral products of Spain
 - 4 Where and what are the following —Finisterre, Europa, Iviza, Ebro, Minho, and Roca?
- B.**
1. Describe the surface of Spain and Portugal, showing what parts are elevated and what lowland, and name the chief mountain ranges
 - 2 Name six seaports of Spain and Portugal, naming any special exports or imports connected with them
 - 3 Name the manufactures and state the chief manufacturing provinces of Spain and Portugal
 - 4 Name the chief imports and exports of Spain and Portugal
-

ITALY

GENERAL DESCRIPTION.—Italy bears the same relation to the mainland of Europe as India does to Asia, being the central of the three peninsulas which project from the south of the continent. It also bears a striking resemblance to India in other ways. India has the mountain wall of the Himalayas to the north, the alluvial Indo-Gangetic Plain at the foot of the

mountains, the mountainous peninsula of the Deccan, with the island of Ceylon at the extreme south. Italy has the Alps to the north, the alluvial Plain of Lombardy at the foot of the mountains, the boot-shaped mountainous peninsula with the island of Sicily at the toe. The chief difference in structure between the two countries is in the peninsular portion, the Deccan being a triangular plateau and peninsular Italy having a backbone of mountains, the Apennines extending throughout its length. The climate of Italy is generally pleasant, the rainfall fairly abundant, and, as the soil is mostly fertile, the agricultural products are varied and plentiful. The country has a very ancient history, and has played a very important part in the growth of civilisation and the spread of Christianity.

BOUNDARIES.—Italy resembles India in its boundaries, viz. a semicircle of mountains, forming a barrier on the north, and the sea round the peninsula.

The Alps on the north are very lofty and have an important effect upon the climate, but have never proved very formidable barriers against invasion (Contrast with Himalayas)

SIZE—Over 116,000 sq miles (before the Great War, but has been enlarged by territory taken from Austria by the Peace Treaty), or about as large as the United Provinces of Agra and Oudh

COAST-LINE—In outline Italy resembles a long riding-boot, with Cape Spartivento, the most southerly point of the mainland, at the toe, and Cape di Leuca at the heel

The bend in the north-west is called the Gulf of Genoa, and here the coast is steep, the Alps descending sharply into the sea. This coast is known as the Riviera, and is much frequented in winter for its charming climate, the background of mountains forming a barrier to the cold north winds. In other parts the coasts are mostly low.

The Bay of Naples on the west is very beautiful. The large opening in the south is the Gulf of Taranto, and on the east is the Adriatic Sea, in which severe storms sometimes occur

Sicily is divided from the mainland by the Strait of Messina, and the Strait of Bonifacio lies between Corsica and Sardinia

Corsica belongs to France. Elba is famous as the residence of Napoleon I from the Treaty of Paris in 1814 to the spring of 1815

RELIEF—In the north is the Plain of Lombardy, well watered and very fertile, and hence very productive and populous.

Marshy and, in some cases, unhealthy lowlands lie near the

coast in many parts, the best known being the Roman Campagna (*Cam-pān-ya*)

The crest of the Alps forms the northern boundary, and here many spurs, between which flow tributaries to the Po, extend into the Northern Plain. At their western end the Alps bend round, and are continued under the name of the Apennines, throughout the whole length of the peninsula, and into Sicily. The highest peak, Mt Corno, is near the centre of the range. Mt. Vesuvius, near Naples, and Mt. Etna in Sicily, are famous active volcanoes.

RIVERS—Italy is, on the whole, a fairly well-watered country, but lacks navigable streams.

The chief river is the Po (450 m), which drains the Plain of Lombardy, and, being largely fed from the glaciers of the Alps, maintains its volume in summer. This river is navigable for a long distance, and also is of great service in irrigation because of its surface being above the level of the country through which it flows. This raising of the bed is due to the great amount of solid matter brought down by the tributary streams. Many large and famous cities are situated in the basin of the Po, some of the chief being Turin, Milan, and Verona.

The Adige drains a large part of the Tyrol, and after flowing through the Northern Plain enters the Adriatic Sea a little to the north of the Po.

The Tiber (210 m) and the Arno (150 m) are the chief rivers of the Italian Peninsula. The latter is navigable by boats as far as Florence, and the former by small vessels to Rome, but both rivers vary much in volume at different seasons.

LAKES.—Italy has a considerable number of lakes, of which the most famous are those which lie in the southern valleys of the Alps. The chief are Maggiore, Como, and Garda.

CLIMATE AND RAINFALL.—Compared with Spain, Italy has a better rainfall, and not such great extremes of heat and cold. The climate varies considerably in the southern, central, and northern portions. The south suffers from a hot African wind, called the *sirocco*, and has a deficient rainfall. Hence the climate of this part resembles that of Spain. Central Italy has a pleasant climate and sufficient rainfall. The Northern Plain has hot summers, but suffers from cold winds from the Alps in winter.

FERTILITY OF SOIL.—Only about one-eighth of the soil of Italy is actually unproductive, and about the same proportion is forest land. The remainder is either pasture or agricultural land, but the latter varies very much in fertility. The richest soil is that of the Northern Plain, which is irrigated by the waters of

the Po, and produces great and frequent crops of rice and grass. The lower valleys of the rivers are generally very productive, but the uplands are mostly under pasture.

FIG. 108—ITALY.



PRODUCTS.—Agricultural.—1. Wine, as in France, is the most valuable product, but is generally only of moderate quality.

2 Cereals —Wheat, maize, pulse, rice, and the other European grain crops.

3. Olives are largely grown, and much oil is extracted.

4. Other crops are hemp, flax, cotton, tobacco, and fruits

5. Cheese is produced largely on the rich pastures of Lombardy.

Animal.—Cattle, sheep, and goats are numerous Silk is produced in large quantities in all parts, but especially in the northern provinces of Piedmont and Lombardy. Fishing for coral, sponges, and tunny employs many men

Mineral.—Coal is deficient in quality and quantity, and much has to be imported Sulphur is very abundant in the volcanic island of Sicily, and is largely exported. Much iron ore of excellent quality is obtained in the island of Elba Marble is plentiful, that of Carrara being the most famous.

There are many other ores, but they are not extensively worked.

MANUFACTURES.—The silk industry is the most important, and employs a large number of persons, most of whom are engaged in reeling the silk, which is then largely exported to France

Artistic articles in glass, marble, wood, coral, lace, cameos, straw, and earthenware are produced in many cities, and are the most widely known of Italian exports

The manufacture of iron and of cottons and woollens is being steadily developed, the latter chiefly in places where water power is available.

The chief manufacturing towns are Milan and Genoa, which produce silk goods, Venice, lace and glass, Florence, earthenware and mosaics, and Naples, cameos, corals, &c

TRADE—Italian trade is steadily growing in volume, especially northwards through the Alpine tunnels and eastwards by the Suez Canal Perishable goods are now carried by rail northwards to Antwerp, and thence to the British Isles. A very active interchange of products is carried on between Italy and Germany.

MEANS OF INTERNAL COMMUNICATION.—In the Northern Plain commerce is easily carried on both by the rivers and railways, of which a good system exists. In the Peninsula the railways mostly follow the coasts, with branch lines inland, but these lines are seldom carried over the Apennines. Roads are mostly bad, except the old Roman roads. Canals for navigation are of small importance.

FOREIGN TRADE.—Imports.—Coal, wheat, and raw cotton are the most important.

Exports.—Silk (cocoons, raw, thrown, and manufactured), much the most valuable, wine, eggs, sulphur, raw hemp, and flax.

SEAPORTS.—The chief ports in their order of importance, judged by the tonnage of vessels entering and leaving, are Genoa, Naples, Messina, Palermo, Leghorn, and Venice. Genoa (272) and Venice (160) were great ports in the Middle Ages, before the discovery of a water route by the Cape of Good Hope to the East Indies and the discovery of America at the end of the fifteenth century. They then declined, but have revived in recent years and now—

Genoa has a large import trade, while Venice has the chief export trade.

Naples (678), the largest city in Italy, has a great import of (1) wheat for conversion into macaroni, the staple food of the people, and of (2) manufactured goods.

Messina (126) and Palermo (340) export wine and fruit. Leghorn is the port for Florence and Pisa.

Trieste (121), an important port, now included in Italy.

TOWNS —1 Of the Northern Plain

Milan (599), the largest city in North Italy, has manufactures of silk and cutlery, and has great trade. It is famous for its beautiful marble cathedral.

Turin (427), on the Po, was once the capital of Italy, and now has silk and woollen manufactures. Great trade through the Mont Cenis Tunnel is carried on from Turin.

Genoa (272) is beautifully situated overlooking the Gulf of Genoa, and has many splendid palaces and churches. It is famous as the birthplace of Columbus. In the Middle Ages, Genoa was the chief seat of the manufacture of velvet, which is still carried on there. It is also an important port.

Venice (160), built upon a number of small islands on the shore of the Adriatic Sea, is remarkable for its beauty and is famous in history. In the Middle Ages, Venice was a powerful Republic, and also the chief centre of trade with the East. Like Genoa, it gradually decayed as British, Dutch,

and Spanish commerce grew, but still continued to be the seat of art and of luxury. In recent times prosperity has to some extent returned to Venice owing to the opening of the Suez Canal.

2. Of the Peninsula.

The largest city is **Naples**, but the most celebrated is **Rome** (542), on the Tiber. This city was founded about 2,700 years ago, and was for many centuries the capital of the Roman Empire. It afterwards, under the Popes, became the centre of Christianity, and exerted great influence upon European history. In 1870 Rome became the capital of the kingdom of Italy, and the Pope was deprived of temporal power. The city abounds with beautiful buildings, both ancient and modern, the chief of the latter being the cathedral of St. Peter. The numerous churches and galleries are adorned by priceless paintings, statues, and other works of art.

Naples (678) is beautifully situated upon the Bay of Naples, and is a very important trading and manufacturing city. Unlike most Italian cities, Naples is relatively modern, and has few historical associations. It was the capital of the kingdom of Naples till 1860, when it was added to the kingdom of Italy.

Florence (232), on the Arno, was an independent republic with considerable territories in the fifteenth and sixteenth centuries, and was then a centre of art and letters. It now has manufactures of mosaics, jewellery, and silks.

Pisa, near the mouth of the Arno, was once a powerful republic, but is now chiefly known for its leaning tower. **Herculaneum** and **Pompeii** were overwhelmed by an eruption of Vesuvius in 79 A.D., and have been partially unearthed in recent times. **Brindisi** is important as the point of departure for mails and passengers to the East through the Suez Canal.

Sicily and **Sardinia** are each between 9,000 and 10,000 sq miles in extent, the former being somewhat the larger. Sicily has a very fertile soil, and a dense population (355 to a square mile), while Sardinia has much unproductive soil and less than one-fourth the density of population. Sicily has three large towns—**Palermo** (340), **Catania**, and **Messina**—all of which are seaports, with exports of wine, fruit, and sulphur. The chief town in Sardinia is **Cagliari**.

POPULATION—Over $37\frac{1}{2}$ millions, or 310 to a square mile.

This is a great density, especially as a large part of the surface is mountainous.

THE PEOPLE—The Italians are a mixture of many races. In very early times, before the arrival of the Aryans, the country was inhabited by numerous tribes of people, with whom many races of Aryan extraction mingled—viz. Latins, Greeks, Celts, and Teutons.

FOREIGN POSSESSIONS —The Colony of Eritrea on the African Coast of the Red Sea has an area of about 88,000 sq miles. Its capital is Massaua. Italy has also a protectorate on the coast of Somaliland. Tripoli and Benghazi in Northern Africa.

MALTA and the adjoining islands of Gozo and Comino are situated in the Mediterranean Sea between Sicily and Africa. Total area, 120 sq. miles, population 228,000, or over 1,600 to the square mile. These islands belong to Great Britain.

Valetta (26), the capital, a strongly fortified city, has one of the finest harbours in the world, and being half-way between Gibraltar and Port Said is a most important port of call for vessels.

Malta is the headquarters and repairing station of the British fleet in the Mediterranean.

People.—Mostly of Semitic origin, speaking a peculiar language allied to Arabic and ancient Carthaginian, the upper classes mostly speak Italian.

Industry—Many of the population are employed in connection with the shipping, about 5,000 in Gozo make Maltese lace. The islands are very highly cultivated, and produce corn, cotton, early potatoes, oranges, grapes, and melons.

Citta Vecchia (7) (Old City), the former capital, is the only other town of importance.

Government.—The Governor, who is appointed by the Crown, is assisted by an Executive and a Legislative Council, the latter of which consists partly of elected members.

Climate—Hot summers and mild winters.

EXAMINATION PAPERS

- A. 1 Name the mountain ranges within and on the borders of Italy, indicating their direction, and naming the most prominent peaks.
- 2 Describe a coasting voyage from Venice to Genoa, mentioning the chief capes, openings, islands, and straits.
- 3 Name the chief vegetable products of Italy, as far as possible in order of importance, and give reasons for their cultivation in certain parts.
- 4 Name six Italian seaports, indicate their position, give some particulars concerning their trade.

- B 1. Draw a map of Italy, inserting the main physical features
 2 Name the islands on or near the Italian coast and describe Sicily, stating its physical features, productions, and chief towns
 3 What minerals do you connect with Elba, Carrara, and Sicily? and mention any other minerals worked in Italy
 4 Say what you can of Rome, Venice, Naples, Genoa, Milan, Turin, Palermo, Brindisi, and Florence
- C. 1 Compare Italy with India in as many respects as you can
 2 Name some manufacturing industries carried on in Italy, and mention some towns connected with them.
 3 Where is Malta? What is its value as a British possession?
 4 Delhi has been called the 'Rome of Asia' Why?
-

ROUMANIA

Roumania is one of the Balkan States, but being north of the Danube it does not belong, geographically, to the peninsula. It is a fertile, well-watered country, almost as large as Nepal, lying between the lower course of the Danube and the Carpathian Mountain system. The kingdom is made up of the provinces of Wallachia and Moldavia, and includes also all the Delta of the Danube. A part of Eastern Hungary was added by the Peace Treaty

The majority of the people are engaged in agriculture, the chief crops being maize and wheat. Plums are also largely grown and exported. Mining is becoming more and more important, the country being very rich in minerals. Coal is dug, and petroleum is of great commercial importance, as it can be put on the market more cheaply than the Baku oil.

The capital and largest town is Bukarest, which has about 340,000 inhabitants. The chief ports are Galatz and Braila, upon the Danube.

The government is a limited monarchy.

BALKAN PENINSULA

GENERAL DESCRIPTION.—This is the most eastern of the three great peninsulas of Southern Europe, and, like the Italian and Iberian Peninsulas, has an elevated surface. This peninsula comprises a number of states, which were once parts of the

Turkish Empire, but most of which are now either entirely or partly independent. The inhabitants are of many races and religions, and often bitterly hostile to one another. The population is scanty, and the many natural resources of the country are but slightly developed. In consequence of its elevation, the Peninsula resembles Spain in having very cold winters; but the rainfall is generally sufficient and the soil is fertile. It is a land of rapid streams, which are of very little service in commerce. Greece, the southern portion, though very small, has played a great part in the history of civilisation.

STATES —1 European Turkey; area about 10,880 sq miles

2 The kingdom of Greece, area about 41,900 sq miles

3 The kingdom of Bulgaria with Eastern Roumelia; area about 43,000 sq miles

4 Albania; 4000 sq miles

5 Jugo-Slavia 80,000 sq miles.

BOUNDARIES —The boundaries are, with the exception of a short distance in the north-west (Bosnia and Herzegovina), natural—the Danube on the north and the sea on all other sides

COAST-LINE —Except in the Black Sea the coast is remarkably broken by deep openings, especially in Greece and the coast of Turkey between Greece and the Dardanelles. The Adriatic and Ionian Seas wash the west coast, and the Ægean Sea, Sea of Marmora, and Black Sea are on the east. The straits connecting these seas, the Dardanelles and the Bosphorus are politically important as affording the only highway for Russia to the open sea on the south

The chief openings are the Gulf of Salonica in Turkey, and the Gulfs of Corinth and Ægina, which almost cut Greece into two parts, the Isthmus of Corinth connecting the peninsula of Morea with the mainland

The Peninsula has many islands. On the west are the Ionian Islands, with Corfu and Zante, the best known, and on the east the Archipelago, of which the largest is Negropont, a long island near the mainland

Candia, to the south of the Archipelago, is 160 miles long and over 3,300 sq miles in area. It is mountainous, the chief mountain being Mount Ida.

RELIEF.—The surface of the Balkan Peninsula is almost wholly occupied by plateaux, from which rivers flow in many directions. Upon the plateaux are numerous scattered groups of mountains and mountain ranges.

The **Balkan Mountains** form the chief range, rising from the Danube Valley on the north, and descending to that of the Maritza on the south. This range, though not of very great height—its highest point being 8,000 ft—is remarkable for steepness and for the height of its passes.

From the Balkans a lower range, the **Rhodope Mountains**, run to the south-east, and the **Pindus Mountains** south into Greece. **Mt. Olympus**, near the Grecian border, and **Mt. Parnassus**, north of the Gulf of Corinth, are lofty and well-known peaks.

Lowlands—The only plains are in the east—the **Bulgarian Plain**, south of the Danube, and the **Valley of the Maritza**.

RIVERS—The **Danube**—This river, which forms the northern boundary of the Balkan Peninsula, flows through an extensive plain, and receives the drainage of the Balkans and of the Transylvanian Alps. The lower course of the Danube is a great navigable stream, with many lakes and swamps on the left bank, and when near the sea the stream divides into many channels.

Numerous rapid rivers flow from the high lands to the coasts, but they are of very little service in commerce. The chief are the **Maritza** and **Vardar**.

CLIMATE AND RAINFALL—The summers are hot, except in the more elevated parts, and the winters are very cold, especially compared with parts of Italy in the same latitude. The winter climate of Greece resembles that of Spain in its dryness and severity. Turkey and Bulgaria, in the mountainous regions, have much snow. The rainfall is generally sufficient for agriculture.

FERTILITY OF SOIL.—The river valleys are very fertile throughout the Balkan Peninsula. In Turkey and Bulgaria the uplands are largely covered with forests, which are now being rapidly cut down. The uplands of Greece resemble those of Spain in being dry and barren. Modes of cultivation are generally very rude.

PRODUCTS.—1. **Agricultural.**—These are not nearly so important as they might be with better methods of cultivation. The most general crops are maize and other cereals, tobacco, cotton, and fruits. The vine is largely grown and much wine is exported. Currants, figs, and olives are exported from Greece, and plums from Serbia. Roses are grown in Roumelia for the manufacture of attar of roses, and Turkey produces coffee, madder, opium, and gums.

2. **Animal**—The common domestic animals are the chief. Asses and mules are used for transport over the hilly roads of Greece.

Silk is obtained in Turkey, Greece, and Bulgaria.

Fisheries.—Sponges are an important product of the Mediterranean. The Bosphorus and Sea of Marmora have valuable fisheries of food fishes.

3. **Mineral.**—Turkey. Coal abounds, but very little is obtained. Copper, lead, silver, and iron are also plentiful, but mining industries are not actively worked in Turkey. Greece. Lead ore is abundant and actively worked. Iron ore also exists, but is undeveloped. Silver, statuary marble, and zinc are also found in considerable quantities.

Serbia: Minerals are abundant, but are little worked.

Bulgaria produces coal, iron, and salt.

MANUFACTURES—The manufacturing industries of all the Balkan countries are chiefly domestic and on a small scale. Carpets, muslins, copper and brass utensils are the chief.

TRADE—The carriage of merchandise is generally difficult in this peninsula owing to the lack of navigable rivers, canals, and good roads. The railway system is now being developed under difficulties, owing to the height of the plateaux and of the passes. The internal trade is consequently small. The seaports carry on an active external trade, the imports much exceeding the exports. The Greeks possess a great part of the commerce of the Levant and Black Sea.

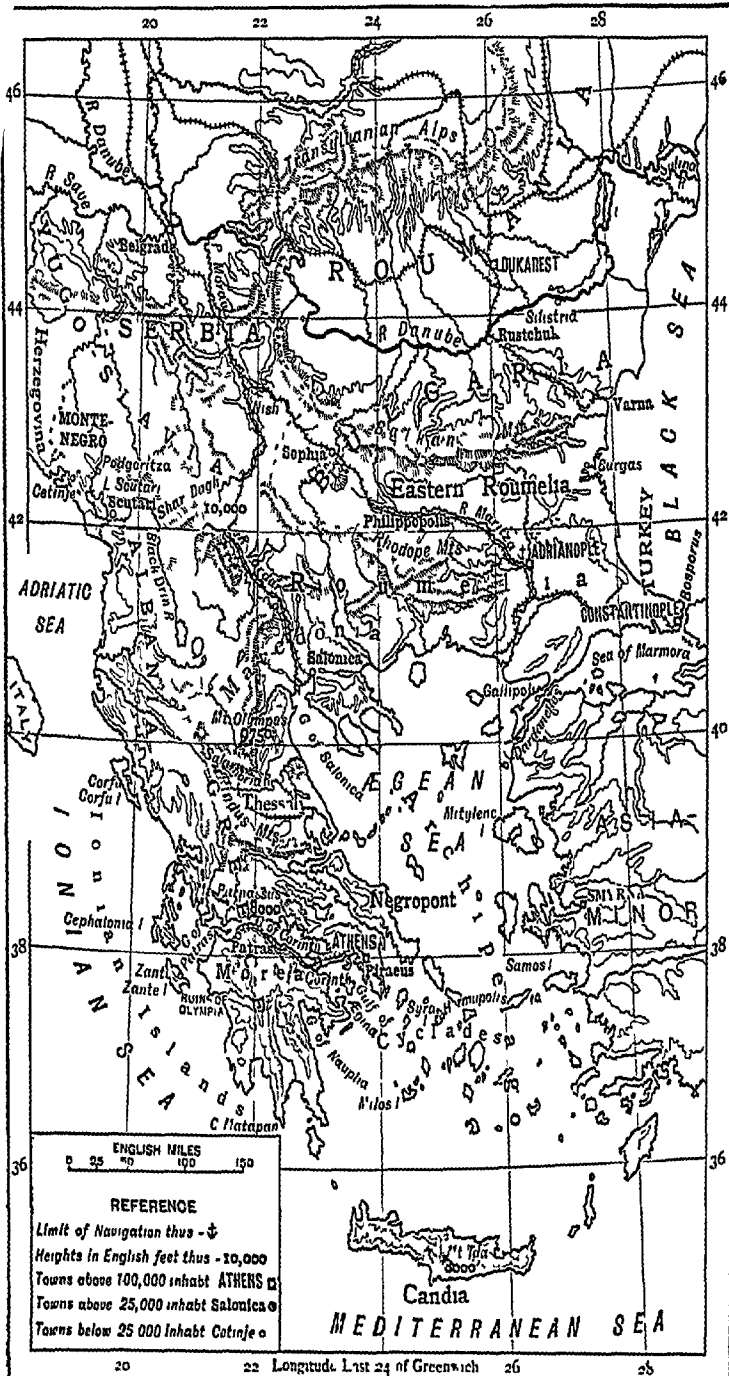
RAILWAYS.—The two main railway lines in Turkey are.—

(a) From Belgrade through Nish to Salonica.

(b) From Nish to Constantinople.

In the construction of these lines the valleys of the Morava, Vardar, and Maritza have been followed.

FIG 104—THE BALKAN PENINSULA PHYSICAL AND POLITICAL



Walker & Butcher

Longmans & Co London & New York

CANAL.—The Ship Canal between the Gulfs of Corinth and Ægina is the only one of importance.

IMPORTS.—The manufactures of the Peninsula are unimportant, and hence the imports are manufactured goods, chiefly cotton goods. Others are woollen goods, machinery and metals, and tropical produce.

EXPORTS.—These are the agricultural products. From Turkey are exported silk, wheat, raisins, and tobacco; from Greece, currants and other fruits, sponges, and olive oil; from Serbia, wine and plums; and from Bulgaria, wheat.

The chief seaports are Constantinople, Salonica, and Patras

Constantinople has great trade, being the centre of commerce in the Turkish Empire. Much of the produce of Asiatic Turkey passes through this port.

Salonica has grown greatly in importance since the construction of the railway to Nish and Belgrade, and is now on the shortest route to Egypt from Northern and Western Europe.

Patras is the chief port for the export of currants.

STATES AND TOWNS.—THE TURKISH EMPIRE—This empire embraces European Turkey, 10,880 sq miles, together with extensive territories in Asia.

In Africa, Egypt is no longer part of the Turkish Empire.

EUROPEAN TURKEY consists of the south-eastern corner of the Balkan Peninsula, and is bounded by the Black Sea, the Sea of Marmora, the Ægean Sea, and Bulgaria. The country is mostly lowland, crossed by low ranges of hills.

The population is over 2 millions, or 180 to a square mile, and consists of Turks, Greeks, and Albanians, together with representatives of many other races, as Slavs, Magyars, Jews and Armenians.

Constantinople (1,200) is the capital and largest city of the whole Turkish Empire. It is excellently situated for commerce upon the Bosphorus, and presents a very beautiful spectacle when seen from the water; but it is badly lighted and drained, and many of the streets are very narrow and dirty. For many centuries previous to its capture by the Turks in 1453 this city was the capital of the Eastern Roman Empire, which existed for about a thousand years after the downfall of the Western Roman Empire.

Adrianople and Gallipoli are important trading towns, and the last

named is the chief port for the Turkish navy, and commands the passage of the Dardanelles

GREECE, or the kingdom of the Hellenes, consists of the indented peninsula of Morea, Northern Greece, the Islands, and Thessaly, with a total area of 41,900 sq miles. The population is more than 4 millions, or about 70 to a square mile, and the Greek people are of mixed Hellenic and Albanian race.

The surface of Greece is very mountainous and largely barren. Therefore the Greeks have long been compelled to seek a living in maritime and commercial pursuits, and are now noted as seamen and merchants.

Athens (168) the capital, is the largest city, and is one of the most famous historical cities in the world. Twenty-five centuries ago this city was the home of a number of sculptors, poets, architects, dramatists, &c., whose names have become immortal, and much of whose work still remains as models of perfection. Athens has many beautiful and interesting ruins, the chief being upon the rocky hill called the Acropolis.

Piræus is the port of Athens. Patras has the chief export of currants. Corinth and Olympia are now decayed, but were important places in the days of ancient Greek glory. Salonica is an important seaport.

SERBIA is a mountainous and fertile country to the west of Bulgaria, with an area of 33,890 sq miles and a population of $4\frac{1}{2}$ millions. It now forms part of the new Yugo-Slavia State.

The people are mainly Slavs, with a good many Rumanians, Gypsies, and Germans. The country is rich in minerals, but almost the sole occupation of the people is agriculture. Serbia became quite independent of Turkey in 1878 by the Treaty of Berlin.

Belgrade (90), the capital, is a fortified town at the confluence of the Save and Danube.

Nish is at the junction of the railway lines from Constantinople and Salonica, and is a place of increasing commercial importance.

BULGARIA and **EASTERN ROUMELIA** form a state about 43,000 sq miles in area. The northern boundary is the Danube, the southern is the *Ægean* Sea, and the eastern is the Black Sea. The soil is productive, and the people are mostly engaged in pastoral and agricultural pursuits. The population is over $4\frac{1}{4}$ millions,

or 110 to a square mile, and consists chiefly of Bulgars (Slavs), together with Turks, Greeks, Jews, &c

Sophia (100) is the capital, and Philippopolis (46) is the next largest town. Rustchuk and Silistria are towns of some importance upon the right bank of the Danube. Varna, upon the Black Sea, is the chief port.

MONTENEGRO and **ALBANIA** were formerly independent countries. They are now contained in the Jugo-Slavia State. They comprise mountainous land bordering the Adriatic Sea.

RELIGION — Muhammadanism is the religion of the Turks. The Greek Church form of Christianity is the religion of Greece and of most of the Slavs. Roman Catholicism is professed in Serbia and Bosnia, and there are many Jews and Armenians.

Samoa, an island of 180 sq miles and population of 48,000, lying off the coast of Asia Minor, forms a principality paying tribute to Turkey. The soil produces wine and olive oil, which, with hides, form the chief exports.

EXAMINATION PAPERS

- A 1 Describe a coasting voyage from the Gulf of Salonica to the Gulf of Arta, naming seas, openings, islands lying near the mainland and seaports.
- 2 Name the general vegetable products of the Balkan States, and those, in addition, peculiar to Greece.
- 3 Name the Balkan States with their capitals, and say what form of government each has.
- 4 What political importance attaches to the position of Constantinople?
- B 1 Describe the climate of Greece and Bulgaria, comparing each with the other and with Spain.
- 2 Name the chief exports of Turkey and Greece.
- 3 Name the races of people inhabiting Turkey, Greece, Bulgaria, and Serbia, indicating those who form the majority in each state.
- 4 Name the mountain ranges of the Balkan Peninsula, and give some idea of their height.
-

AFRICA

GENERAL DESCRIPTION.—Africa is the south-western portion of the great land mass of the Eastern Hemisphere. It is divided from Europe by the Mediterranean Sea, but the north of Africa is geographically similar in many respects to the south of Europe, and the Red Sea, which separates Africa from Asia, is only like a long narrow lake stretching across a continuous desert.

Africa extends for about an equal distance north and south of the Equator, and it may therefore be called the **Tropical Continent**. Its area is about $11\frac{1}{2}$ million sq. miles, or two-thirds as large as Asia, and three times as large as Europe; the population is vaguely estimated at 200 millions. The most thickly peopled part of the continent is the Sudan. The deficient rainfall causes the vast tracts of the Sahara in the north and the Kalahari in the south to be almost uninhabited.

Until recent years the interior of the continent was a comparatively unknown land, but the discoveries of Livingstone on the Zambesi and the southern lake district, of Burton, Speke, and Baker around the head waters of the Nile, of Cameron and Stanley in the Congo Basin, and of many other intrepid explorers, have made known to us the courses of the great rivers of Central Africa

This lack of geographical information which so long prevailed with regard to Africa was largely due to the following causes —

- 1 The Sahara, an almost impassable barrier, shut off the centre from communication with the Mediterranean States

- 2 The unbroken character of the coast prevented foreigners from penetrating beyond the fringe.

3 All the great rivers have their courses impeded by rapids and cataracts, thus preventing direct communication by sea

4. The hot and unhealthy climate of the coast districts in many parts prevented European settlements.

5 The barbarous condition of the inhabitants.

For some time past the continent has been undergoing the process of being partitioned among various European States. England possesses vast tracts extending from the Cape of Good Hope nearly to the Equator, considerable districts in Eastern Africa, Senegambia, Guinea, Egypt, and the Sudan. France possesses Algeria, Senegal, French Equatorial Africa, and exercises a protectorate over Tunis and Madagascar. Portugal holds the coast from the Congo to Cape Frio on the west, and from Delagoa Bay to Cape Delgado on the east. Italy has the coastal district from near Sawakin on the Red Sea southwards to the neighbourhood of the Equator and Tripoli. Belgium owns the Belgian Congo.

BOUNDARIES AND COAST-LINE.—Africa is practically surrounded by water, a fact which has also tended to its isolation. The Atlantic Ocean washes the western shores, the Mediterranean Sea separates Africa from Europe, and on the east are the Indian Ocean and the Red Sea.

The coast-line is remarkable for its unbroken character, in this respect resembling Australia and South America. This regularity of outline has had important results on the political development of the continent, and it has important effects on the climate, it is at present a bar to commercial growth.

Commencing in the north of the continent, the character of the coast of Africa in the eastern basin of the Mediterranean Sea is found to be very different from that in the western basin. Here the coast is low and sandy, belonging to the desert region. The delta of the Nile is well irrigated and fertile except where it is below sea-level and covered with lagoons. The ports of Alexandria and Port Said, the former dealing with the produce of Egypt, and the latter the famous coaling station at the end of the Suez Canal, are the only commercial ports of importance. In this basin are the only openings on the north coast, the Gulfs of Sidra and Cabes, the latter bounded westward by Cape Bon, the end of the Atlas Mountains, from which extends the submarine ridge connecting with Sicily, and dividing the two basins of the Mediterranean. Near Cape Bon is Cape Blanco, the most

northerly point of the continent. From here to Cape Spartel, on the Strait of Gibraltar, the coast is high. The chief port passed is Algiers.

On entering the Atlantic Ocean, the coast has a background of mountains for some distance. On the right are the fertile Madeira and Canary Islands with a genial climate, the latter group possessing the volcanic peak of Teneriffe over 12,000 feet high. The coast now becomes low and sandy, the western edge of the Sahara desert having been reached. South of the Tropic of Cancer, Cape Blanco is passed and further on Cape Verde, the most westerly point of the continent, between the mouths of the Senegal and Gambia. South of this cape the coast bends round to the east, forming the great Gulf of Guinea, with an abundant rainfall and luxuriant vegetation. Capes Three Points, Formosa, and Lopez enclose two bays, the Bights of Benin and Biafra, between which is the mouth of the Niger. A chain of islands, evidence of a submarine ridge, lies in the Bight of Biafra; the chief are Fernando Po and St. Thomas, the former belonging to Spain, the latter to Portugal. The coast from here to the south of the continent consists of a narrow coast plain, backed by the mountains bordering the plateau. The mouths of the Congo and Orange rivers are passed, and there are several ports with a coasting trade, but the only harbour of note is Walvisch Bay, a British whaling station in German South-West Africa. Far out in the Atlantic Ocean are the islands of Ascension and St. Helena, both belonging to Great Britain. The former is a naval station, and the latter is interesting as being the scene of the last exile of the Emperor Napoleon (1815 to 1821). Both islands are volcanic in origin.

The Cape of Good Hope is the termination of a peninsula with Table Bay, on which stands Cape Town, to the north, and False Bay to the east. Rounding Cape Agulhas, the most southerly point, the coast runs eastward to Algoa Bay, on which stands Port Elizabeth. The coast of South Africa differs from that of the rest of the continent in having an extensive continental shelf, that is to say, the slope under the sea away from the land is less steep. A submarine bank, known as the Agulhas Bank, stretches for a considerable distance from the shore.

Entering the Indian Ocean, the character of the coast is little altered as far as Delagoa Bay, a good harbour, with Lorenzo Marques on its shores. From this point the coast makes an outward bend and the coast plain widens. Passing the mouth of the Limpopo and Cape Corrientes, the

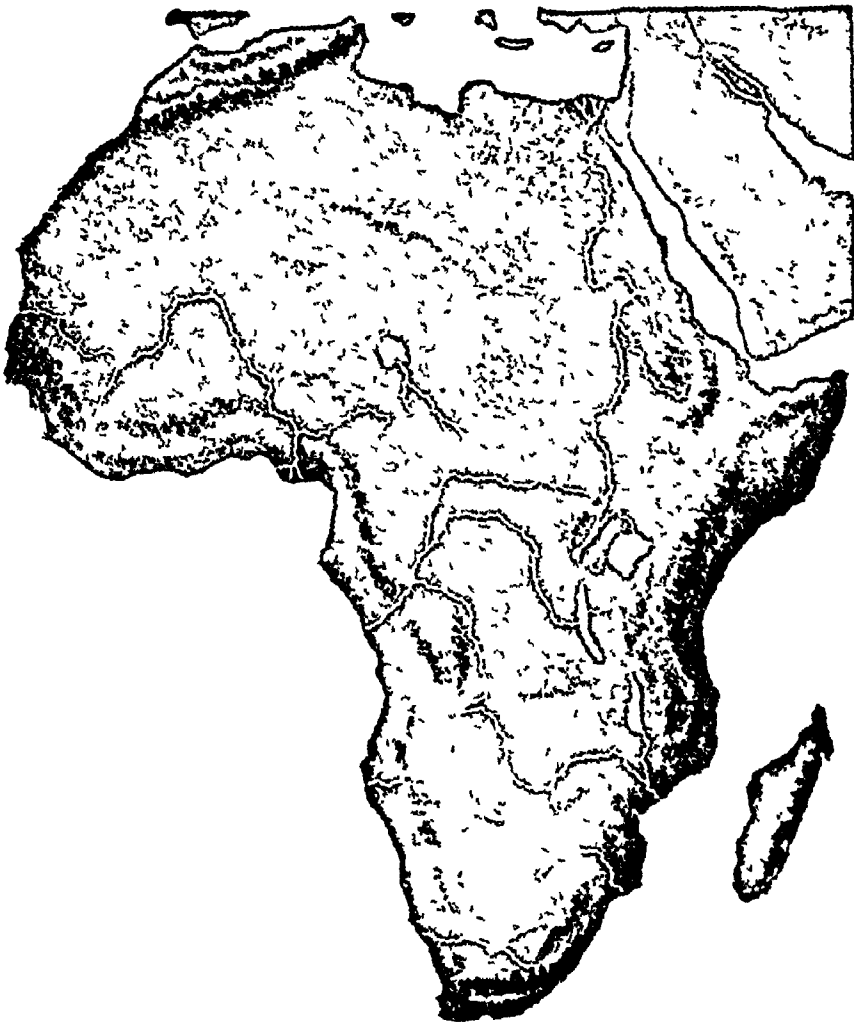
Mozambique Channel is reached, 230 miles wide at the narrowest place, and separating Madagascar from the mainland. Madagascar is a volcanic island, belonging to the French. The chain of mountains which extends throughout its length terminates in **Cape St Mary** in the south and **Cape Amber** in the north. Beyond Madagascar are the islands of **Mauritius** and **Bourbon**, the former belonging to the British, the latter to the French. The river **Zambesi** flows into the **Mozambique Channel**, and at its northern end are the **Comoro Islands**, a French possession.

Rounding **Cape Delgado**, the ports of **Dar-es-Salam** with a good harbour, **Zanzibar** on an island of the same name, and **Mombasa**, the port of British East Africa, are passed. Opposite Mombasa are the **Seychelle Islands**, from which the Government of India receive valuable information during the summer months as to the state of the monsoon winds. Continuing past the inhospitable coast of **Somaliland**, **Cape Guardafui**, the most easterly point of the continent, is reached, off which is the island of **Socotra**, a dependency of **Aden**. Passing through the **Gulf of Aden** and the **Strait of Bab-el-Mandeb**, the **Red Sea** is reached with a rocky desolate coast, another edge of the **Sahara**. The **Red Sea** divides in the north into the **Gulfs of Suez** and **Akabah**, between which lies the rocky peninsula of **Sinai**. The **Gulf of Suez** is connected with the **Mediterranean Sea** by the **Suez Canal**, an engineering feat which has shortened the sea passage between **Asia** and **Europe** by many weeks. The town of **Suez** stands at the southern end of the canal, and **Port Said** at the northern end.

RELIEF.—The physical map of Africa on page 351 shows that only a comparatively small area of the continent in the north is below 100 ft in elevation, the remainder consisting of a plateau or series of plateaux, the height of which varies from 1,000 to 7,000 ft. above sea level. The average elevation south of the **Equator** is much higher than to the north, the area of high elevation being bound seaward by mountain walls more or less parallel to the coast from the mouth of the **Congo** to the **Abyssinian Highlands**, and across the continent in a south-westerly direction along the watershed in which the tributaries of the **Nile** and **Congo** take their rise. This large plateau is traversed by distinct ranges of mountains. The **Abyssinian Plateau** has an average elevation of about 7,000 ft and its highest peaks reach an altitude of 14,000 and 15,000 ft. South of **Abyssinia** a line of mountains can be traced parallel to the east coast, the highest peaks being **Mount Kenia** (18,500 ft) and **Mount Kilimanjaro** (nearly 20,000 ft) near the **Equator**. Between the rivers **Zambesi** and **Lampopo** are the **Matoppo Hills**, and the east coast range is continued south of the latter river.

in the Drakenberg Mountains, which are known in the Cape province as the Nieuwveld Mountains. This is one of the parallel ranges which enclose the Great and Little Karroos, two of the terraces of the plateau. The rivers which drain the great plateau are the Zambesi and the Limpopo which flow to the east, and the Orange River which flows to the west. Like all the other great rivers of Africa they form falls or rapids as they

FIG 105—AFRICA RELIEF



descend from the elevated interior to the coast plains. The lakes of Africa are also situated in the southern half of the continent, often at an elevation of 2,000 or 3,000 ft. They lie in two long depressions which stretch from north to south. The western depression extends due south of the Nile valley, and contains Lakes Albert, Albert Edward, Kivu, and Tanganyika. The

eastern depression is a continuation of the rift of which the Valley of the Jordan and the Red Sea form a part. It contains Lake Rudolf, Nyassa, and several smaller lakes. Under the Tropic of Capricorn, in the southern belt of calms, is the Kalahari Desert.

The Guinea coast has two regions of highlands. North of the Congo in Lower Guinea is a plateau which culminates in the Cameroon Mountains (13,000 feet) near the Bight of Biafra. The chain of islands in the bight are the crests of the submerged portion of this ridge. In Upper Guinea another plateau fills the region between the sea and the valley of the Niger, the elevation is not more than 3,000 ft.

The low tableland of the Sahara stretches from the Atlantic Ocean to the Red Sea with a general height of about 1,000 ft., but it is crossed diagonally by a higher belt from the Congo-Nile watershed north-west to the Tuat oasis where the meridian of Greenwich crosses the Tropic of Cancer. The Lake Chad basin of drainage lies between this belt and the Cameroon Mountains. In the east is the Nile Valley flanked by the higher land of the Red Sea coast.

The extreme north west of the continent is high with true mountain ranges. The Atlas Mountains in Morocco attain an elevation of 14,000 ft., the slope being steeper towards the Mediterranean than towards the interior. In Algeria, the range divides into the Little Atlas near the coast, and the Great Atlas farther south. The Atlas system is related to the mountain system of Southern Europe.

DRAINAGE.—Most of the rivers of Africa are remarkable for the unnavigability of their courses from the sea. This is due to the configuration of the surface of the continent. The rivers rise on the plateau, and for a considerable distance their currents are steady and suitable for inland navigation; but on reaching the edge of the plateau they descend to the plain in rapids or cataracts, and render traffic for any distance from their mouths impossible.

1. The tropical belt is drained by four large rivers—the Nile, Niger, Congo, and Zambesi—and several of smaller magnitude, the chief of which are the Senegal, Gambia, Ogowe, and Kwanza on the west, and the Limpopo, Rovuma, and Juba on the east.

The Nile rises south of the Equator, and drains Lakes Victoria and Albert Nyanza, together with several of smaller size. Its chief tributaries are the Bahr-el-Ghazal, on the left, and the Bahr-el-Azrek and Atbara, from the Abyssinian Plateau. For the last 1,400 miles of its course it does not receive a single tributary, and finally enters the Mediterranean by an extensive delta. Its length is estimated at 4,000 miles.

The Niger rises in the Kong Mountains, drains the Western Sudan, and after making a great curve northwards enters the Gulf of Guinea, forming a large delta at its mouth. Its chief tributary is the Benue, on the left.

The Congo, although not the longest, is by far the greatest river of Africa. It rises to the west of Lake Nyassa, drains Lakes Bangweolo and Moero, and also receives the overflow from Lake Tanganyika. From Stanley Falls, near the Equator, it is a broad, deep, navigable stream for 1,000 miles, until it passes through the East Coast Range, here its navigation is interrupted by rapids. It enters the Atlantic after a course of 3,000 miles by a deep wide mouth. Like the Niger and several other African rivers, it makes a big curve towards the north.

The Zambesi drains the country to the south-east of the Congo basin, and enters the Indian Ocean through a vast delta. The Victoria Falls, in its southern bend, is one of the grandest cataracts in the world. Its tributary, the Shire, drains Lake Nyassa.

2 The only large river draining into the ocean, either to the north or south of the tropical belt, is the Orange River.

3 Lake Chad, situated to the south of the Sahara, and Lake Ngami, on the border of the Kalahari Desert, are centres of inland drainage. Both lakes are fresh and decrease very greatly in size during the dry season.

CLIMATE AND RAINFALL.—The climate is generally hot, the average yearly temperature of the greater part of the continent being 80°. There is, however, much greater uniformity than in the case of the other continents. The difference between the summer and winter temperature in most districts is not more than 20°, while near the Equator it does not exceed 5°.

The seasons are determined by the rainfall, wet seasons and dry seasons recurring with great regularity.

The continent may be divided into five districts, according to the rainfall —

1 The Tropical Belt — Here the rainy season follows the course of the sun; thus, when the sun shines vertically north of the Equator it is the rainy season for the Sudan, while the Zambesi Valley has its rainy season when the sun's rays are vertical south of the Equator. (See maps, p 346.)

This is due to the fact that the land heated by the sun causes an undraught from the sea. The south-east trade-winds from the Indian Ocean discharge their moisture on the mountains of Eastern and Central Africa, while the Guinea Coast is drenched with rain brought by the winds blowing from the Gulf of Guinea.

2 The Sahara, where little or no rain falls

The winds from the Indian Ocean and the Gulf of Guinea part with their moisture before reaching this district, while the north-east trade-winds, which prevail in these latitudes, are land winds, and consequently dry.

FIG. 105b —AFRICA RAINFALL, DECEMBER TO FEBRUARY
WINTER IN N HEMISPHERE.

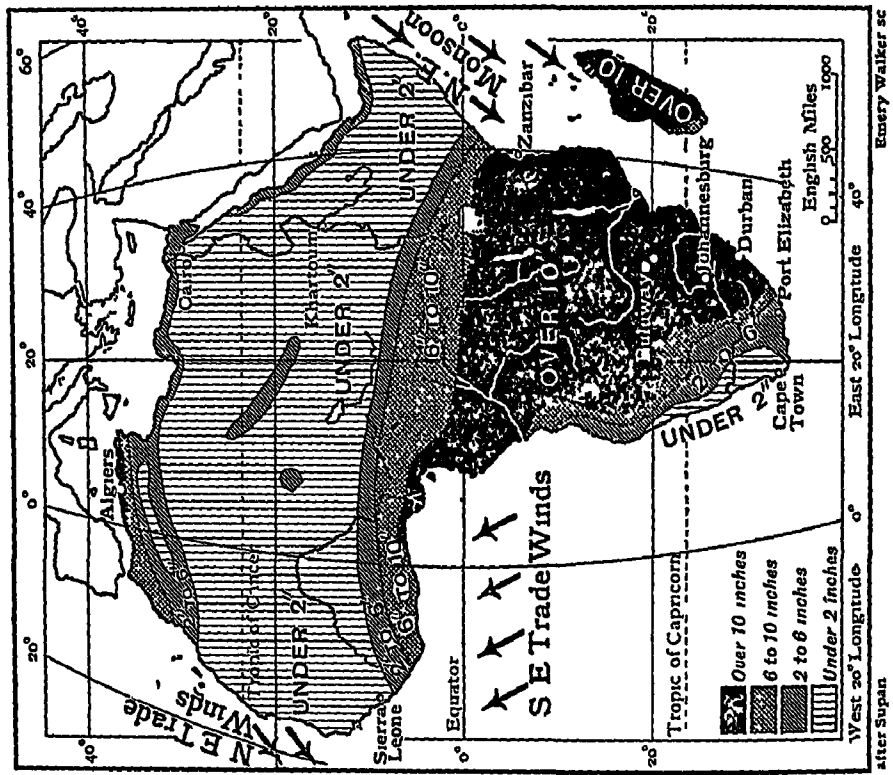


FIG. 105a —AFRICA RAINFALL, JUNE TO AUGUST.
SUMMER IN N HEMISPHERE.

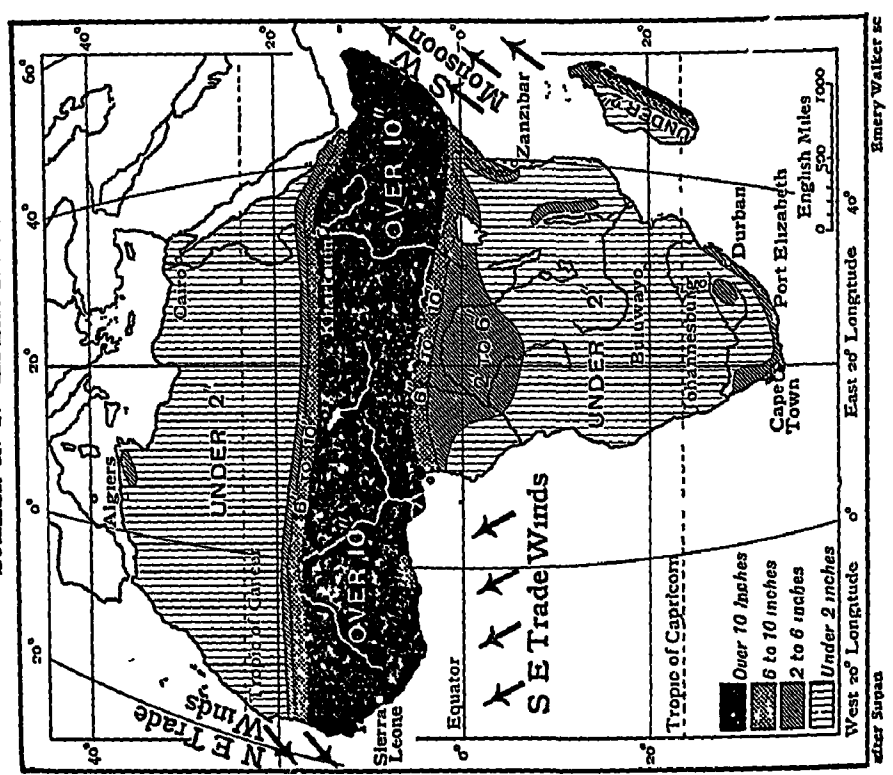
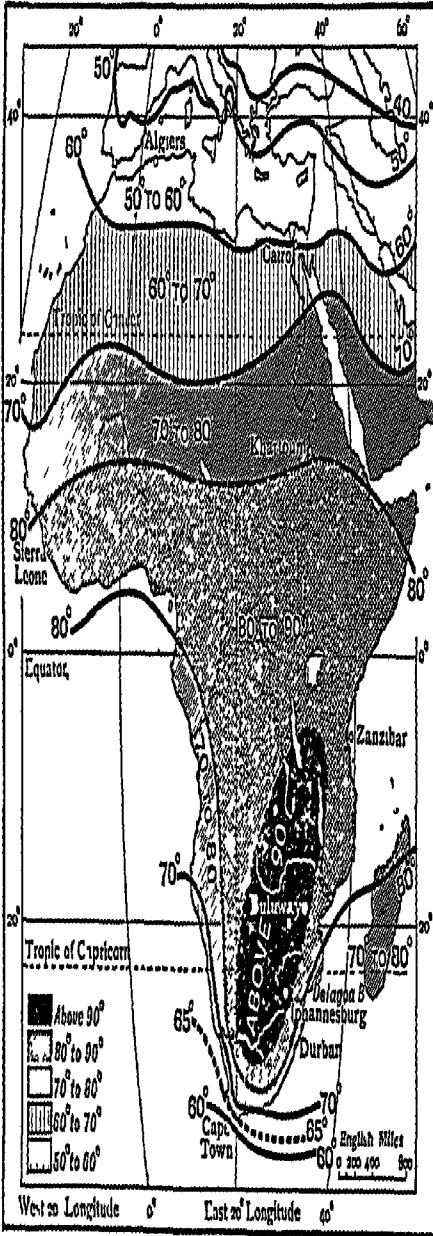
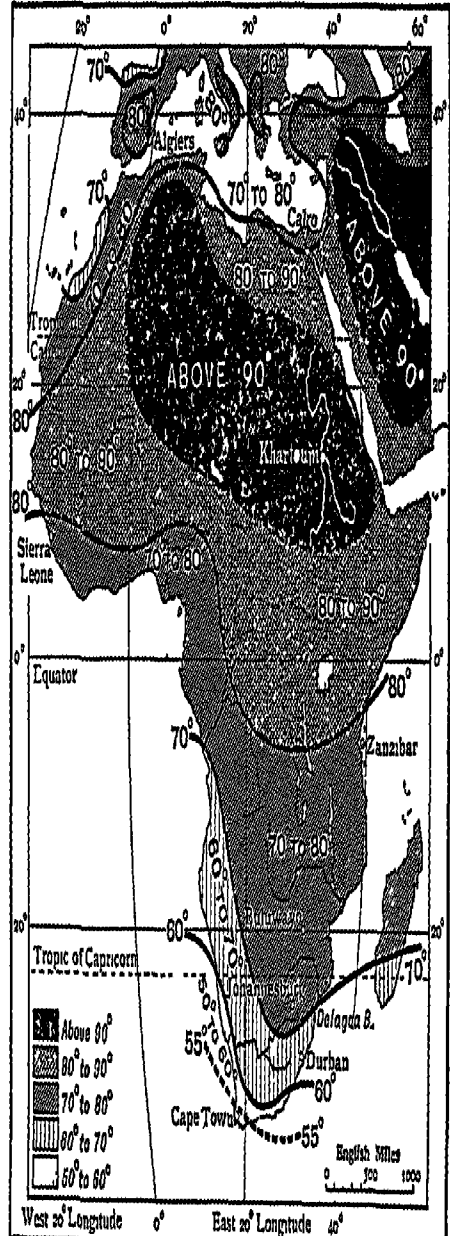


FIG 105a—AFRICA JANUARY ISOOTHERMS



Emery Walker sc

FIG 105b—AFRICA JULY ISOOTHERMS



Emery Walker sc

3 The Kalahari district, in the south-west

The mountains of the east coast deprive the south-east winds of their rain before they reach this district

4 The Atlas region, in the north, has rain during our winter, when the midday sun is overhead south of the Equator

5 The South-west of the Cape Province has rain during our summer, when the midday sun is overhead north of the Equator

PRACTICAL EXERCISES

1 Look at the maps of Africa on page 347 and say what are the summer and winter temperatures of Cape Town, Cairo, and Zanzibar

2 What are the causes of the great heat and dryness of the Sahara?

3 Examine the rainfall maps of Africa on page 346 and notice how the heavy rainfall moves northward from December to June Explain this

4 What causes the great dip to the southward of the isotherm of 70° January and July isotherms? (See maps on p 347)

5 Study the rainfall maps on page 346 and then say what countries are least likely to produce crops

6 If a traveller proceeded from Cape Town to Cairo in summer (summer in the Southern Hemisphere), what variations of temperature would he meet with?

VEGETATION.—In no continent can the relation between climate and vegetation be more closely traced than in Africa, the continent being divided into broad belts with characteristic species.

1. The Equatorial Forest Belt —The characteristic trees of this belt are the giant baobab, ebony, camphor, gum, and many hard and ornamental woods The rubber tree has given rise to a thriving industry

2 Savanna Belts —Proceeding outwards from the Equator, dense forests give place to rolling plains with good timber trees, along the courses of the rivers

3 Steppe-like Belts —These lie between the savannas and the deserts The thorny acacia is the most characteristic tree, and tropical plants flourish wherever cultivated. The bamboo is found in this belt

4 Desert Belts —These lie on the tropical belts of calms, which partly accounts for their desert nature (see map on p 348) Stunted acacias find a precarious existence, and groves of palms occur on the oases

5 The Temperate Belts —Along the north of the continent the vegetation is similar to that of Southern Europe, in the South Temperate Belt the vegetation is characterised by brilliant flowering plants and the comparative absence of trees

Except in the desert areas, vegetation in Africa is remarkably luxuriant The natives find food without much cultivation, and this accounts to some extent for their want of civilisation The chief food-plants are cassava, yam, ground-nut, banana, tamarind, coco-nut, pineapple, and among cultivated plants are millet, maize, cotton, and sugar-cane

ANIMALS—The grassy plains of Southern Africa feed vast herds of antelopes, zebras, quaggas, &c, which are preyed upon by lions, leopards, hyenas, &c. Where trees occur the tall giraffe is seen, while the elephant and rhinoceros are found in the woody and marshy districts. The hippopotamus and the crocodile abound in the great rivers and lakes; the gorilla and chimpanzee inhabit the forests of the Lower Guinea Coast, and monkeys and fierce baboons are numerous, the latter chiefly round the Gulf of Guinea. The ostrich abounds in the desert districts of the north and south. Locusts and white ants are the insects most destructive to vegetation, and the tse-tse fly is fatal to horses and cattle. The python is the largest of numerous varieties of snakes.

Of domestic animals the camel is used as a beast of burden in the north, and the horse and ox in the south. Sheep are reared in large numbers in South Africa.

The commercial value of the various animal products of Africa has long been known, the chief being ivory, ostrich feathers, and wool.

MINERALS.—The most important minerals in Africa are gold, diamonds, salt, and copper. Silver, iron, and lead are also widely diffused.

Gold is found in Central and Southern Africa and on the east and west coasts. The goldfields of the Transvaal now produce annually more than those of Australia.

Diamonds are obtained from the Kimberley Mine, in the Cape Province, in greater abundance than from all the other diamond-producing districts of the world combined.

Salt is found in great quantities in the deserts of the north and south.

Copper is abundantly found in Central and Southern Africa. Oorap, in the Cape Province, and the Katanga district, to the west of Lake Tanganyika, produce great quantities.

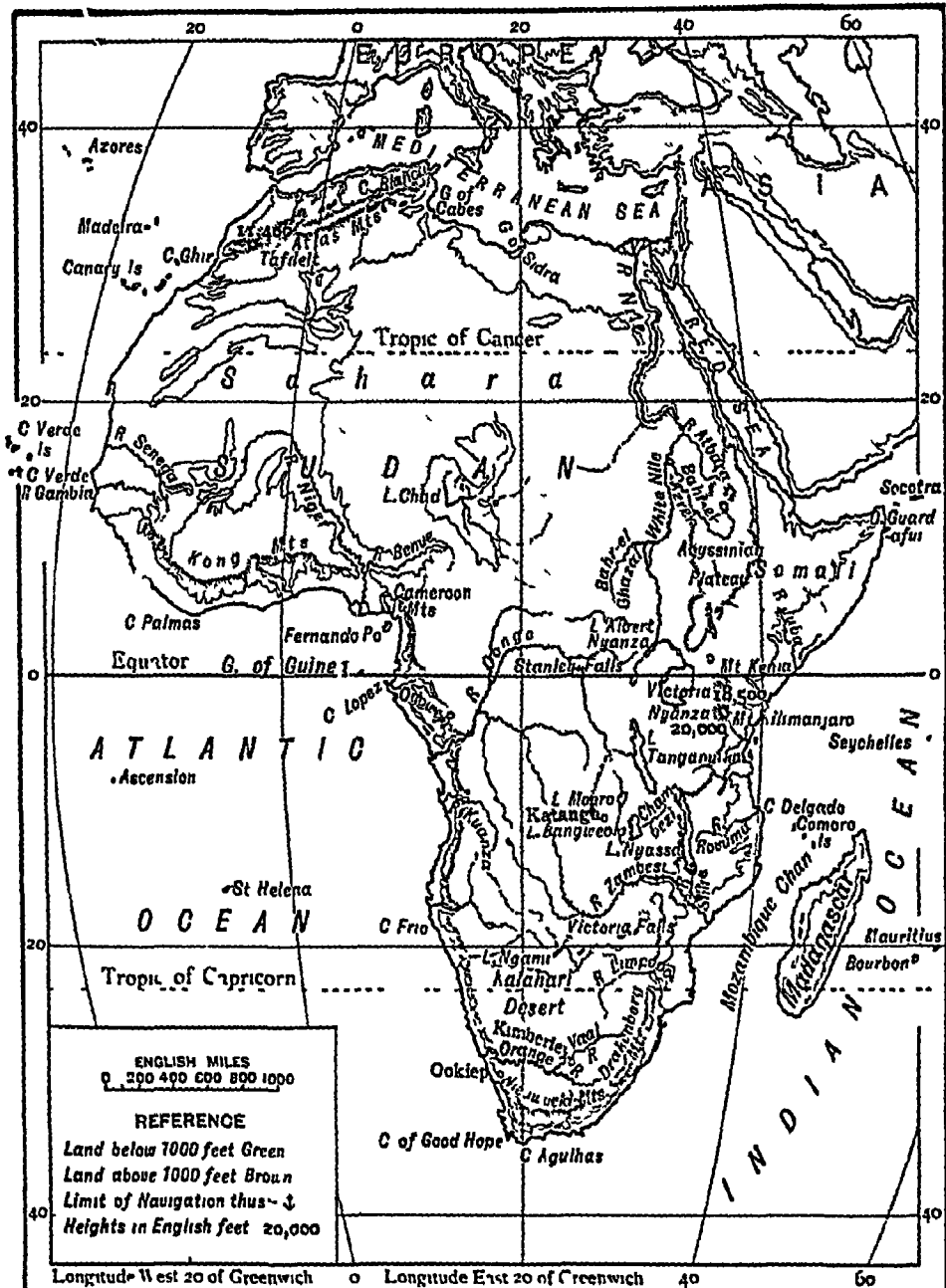
COMMERCE—Some of the obstacles in the way of commercial development in Africa have already been referred to. Another obstacle is the want of facility in transport. Direct communication with the sea from the interior by means of the rivers is difficult or impossible, and roads and railways are at present only in process of construction.

In the north the camel is used for transport, but in many parts of the continent the presence of the tse-tse fly renders the use of animals impossible, and human porters have to be employed. Railway communication between north and south will be established on the completion of the Cape-to-Cairo Railway. This is being laid in the Nile Valley in the north, and has already reached the Sudan, and along the great depression from Cape Town in the south.

European nations are now making much progress in developing the continent in their respective spheres of influence. Agriculture and mining are being improved, and trade is making rapid advance.

PEOPLE—Africa is inhabited by two races—the Caucasian and the Negro.

FIG 106—AFRICA PHYSICAL.



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1 The Caucasian stock inhabits the north and north-eastern parts of the continent, and came originally from Asia. There are two great branches—the Semitic, inhabiting the northern coast districts, of whom the Arabs are the chief type; and the Hamitic,

chiefly inhabiting the Sahara and the north east, of whom the Berbers, Egyptians, and Somali are representative types. Southern Africa is settled by Europeans, chiefly British and Dutch. Arabs are widely distributed as traders in Eastern and Central Africa.

2. South of the Sahara the people belong to the Negro stock. They may be divided into three branches—the true Negroes of the Sudan, the Bantus of the centre and south, and the Hottentots of the south-west. The laziness of the negro has rendered it necessary to import labourers, and there are consequently many Indians in Central and South Africa.

The Caucasian people of the north, and some of the Sudan negroes, are Muhammadans. The Europeans are Christians, and the rest of the people are fetish-worshippers.

THE COUNTRIES IN AFRICA, WITH THEIR CAPITALS

<i>Country</i>	<i>Capital</i>
Independent States (550,000 sq miles).	
Morocco	Fez
Abyssinia	Addis Abeba
Liberia	Monrovia
British (3,277,000 sq miles)	
Egypt (nominally under Turkey)	Cairo
Egyptian Sudan	Khartum
West African Settlements	Freetown, Lagos
Nigeria	Zungeru
British East Africa	Mombasa, Zanzibar
Nyassaland Protectorate	Blantyre
British South Africa.	
The Union of South Africa, { Cape of Good Hope	Cape Town
embracing { Natal	Pietermaritzburg
{ Orange Free State	Bloemfontein
{ The Transvaal	Pretoria
Basutoland	Maseru
Bechuanaland Protectorate	Mafeking
Rhodesia	Salisbury
A large area that formerly formed German East Africa is now under British control	
French (3,640,000 sq miles) ¹	
Algeria	Algiers
Tunis	Tunis
French West Africa and Sahara	Dakar
French Equatorial Africa	Libreville
Madagascar	Antananarivo

¹ Including a large area unoccupied (the Sahara Desert).

Italian (230 000 sq miles)

Tripoli	,	,	Tripoli
Colonies on Red Sea	,	,	Massaua
Italian Somaliland	,		Itala

Spanish (154,000 sq miles)

Spanish Sahara	.	.	.	Rio de Oro
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PRACTICAL EXERCISES

- 1 How do you account for density of population in the Nile Valley?
- 2 Explain why in South Africa so much of the land is desert on the western side whereas the eastern side is very fertile
- 3 What are the chief natural products of the Congo basin?
- 4 Compare the density of the population of Central Africa with the same latitudes in South America
- 5 What parts of Africa, south of the equator, are best suited for the home of white men, and why?

EXAMINATION PAPERS

- | | |
|---|---|
| A | <ol style="list-style-type: none"> 1 Give the area of Africa, and say which parts are most thinly peopled 2 Mention some of the most famous African explorers. What discoveries are associated with their names? 3 Give any reasons why the interior of Africa remained so long unknown 4 What European nations have possessions in Africa? Say where they are situated |
| B | <ol style="list-style-type: none"> 1 Mention the chief mountain ranges of Africa and describe the East Coast Range 2 Name the principal islands to the west of Africa 3 Which are most prominent capes in Africa, and where are they situated? 4 Explain why there is so little difference in the summer and winter temperature of Tropical Africa |
| C | <ol style="list-style-type: none"> 1 When does the rainy season occur in the Cape Province, Natal, Morocco, Senegambia, the Zambesi Valley? 2 Why is the Sahara district almost rainless? 3 Describe the Congo and Zambesi 4 Describe the vegetation belts of Africa, and mention the characteristic productions of each |
| D | <ol style="list-style-type: none"> 1 Account for the position of and give a short description of the African lakes 2 Give situation of the Kong Mountains, the Little Atlas, Mount Kenya, river Benue, Mauritius, Socotra, Victoria Falls, and the Blue Nile 3 What districts are noted for gold, diamonds, palm oil, copper, and the date palm? 4 Where do the following races live, and to what stock do they belong
Kaffirs, Beibers, Hottentots, Arabs, Somalis, Boers? |

NORTHERN AFRICA

GENERAL DESCRIPTION.—Northern Africa includes the States bordering on the Mediterranean Sea some of which—e.g. Egypt—have been the seats of civilisation from very early times

The Sahara Desert forms the southern boundary of these States, and has prevented their civilisation from spreading southwards. The inhabitants belong mostly to the Caucasian type, and consist of two great divisions — 1. **Berbers** (whence the name Barbary States), who are mostly engaged in agriculture. 2. **Arabs**, who are settled and engaged in agriculture in Egypt, but who are largely nomadic and occupied with pastoral pursuits in the western States. **Muhammadanism** is the prevailing religion.

The estimated area and population of the four main divisions are as follows —

1 Morocco,	220,000 sq miles,	3,600,000 inhabitants
2 Algeria,	180,000	5,000,000
3 Tunis,	50,000	1,800,000
4 Tripoli,	400,000	520,000
5 Egypt (excluding the Sudan),	400,000	11,100,000

MOROCCO

This is the most westerly of the Barbary States, and is under the rule of a sultan possessing absolute power.

The surface is very mountainous, rising in terraces to the range of the **High Atlas** (11,400 ft), which extend throughout the country in a north-easterly direction from Cape Ghir, on the west coast.

The climate is warm and healthy. The mountains arrest the moisture brought by the north-west winds, which prevail from October to February, hence the country at the foot of the range on the western side is exceedingly fertile, while that on the eastern side is arid and barren.

PRODUCTS — Minerals are widely distributed, but little worked. Fruits of all kinds and grain flourish. The dates of Taflet are especially noted. The camel is the most useful animal and is the chief means of transport. The principal exports are maize, wool, oil, leather (from goat-skins), and fez-caps.

TOWNS — There are three important inland towns — Fez (140), the capital, noted for the manufacture of leather and the red fez-caps worn by Muhammadans, Morocco, in the south, and Meknez. The chief ports are — Tangier, on the Strait of Gibraltar, the first trading town of the country, Mogador, the port of Morocco, and Rabat-Sallee, the port for Fez and Meknez.

Spain possesses Ceuta and one or two small ports on the Mediterranean.

ALGERIA AND TUNIS

Algeria has been a French province since 1830. The ruler (Bey) of Tunis has been under French protection since 1881

RELIEF.—The surface of Algeria may be divided into three well-marked regions.

1. The fertile lowland strip near the coast, known as the Tell.

2. The upland region, which rises in terraces to the Great Atlas Mountains, an arid district, where alfa-grass (used in the paper manufacture) is the chief product

3 The desert region, lying to the south of the mountains, where the only habitable spots are the oases

In Tunis the most fertile region is the valley of the river Mejerda.

PRODUCTS, PEOPLE, &c —Since the French occupation, the area under cultivation has largely increased, railways and roads have been constructed, artesian wells have been sunk, swamps drained, and large areas planted with trees (especially blue gums), causing the climate to be more healthy and the country more productive

Berbers and Arabs make up most of the population, the former being chiefly settled and engaged in agriculture, while the latter are mainly nomadic. Numerous Jews are scattered throughout Northern Africa

The chief exports are wine, sheep, wool, alfa-grass, iron ore, and coral

TOWNS.—Algiers (170), the capital, has a fine situation on the shores of the Mediterranean. It is an important port, and is connected by railways with other towns of the colony. Oran and Bona are also important ports, and Constantine, a strong fortress, is the chief inland town.

Tunis (164), the capital of the protected State, manufactures silk and woollen goods, leather, and earthenware, Goletta is its port. Kairwan, further south, is one of the sacred cities of the Muhammadans

TRIPOLI

This State was taken by Italy in 1911, and includes the oases of Fezzan. The desert here reaches the Mediterranean, and the only fertile part is a narrow strip near the coast.

The exports are alfa-grass, ostrich feathers, and sponges. Tripoli is the only important town, and is the starting-point for the caravans crossing to the Sudan

EGYPT

Egypt has an independent government, which is at present under English control. The ruler is called the Sultan.

EXTENT, &c —Egypt Proper extends from the Mediterranean up the Nile Valley to a line drawn E and W through Wady Halfa, and from the Red Sea (including the peninsula of Sinai) to the Libyan Desert. Of this, only the narrow Nile Valley, the Delta, and the oases, embracing a total area of 13,000 sq. miles, are habitable.

The Nile Valley has been for ages the seat of a dense population. The extensive remains of pyramids, temples, tombs, &c, dating from very early times, attest its former magnificence.

The climate is hot and dry, and but for the annual rising of the Nile the whole country would be uninhabitable.

PRODUCTS, &c.—The principal occupation of the inhabitants is agriculture. The cultivated districts are —The Delta, the valley of the river, a depression irrigated by a canal from the Nile, known as the Bahr Yusuf, and several oases, of which the Oasis of Siwah, in the Libyan Desert, is the most noted.

The productiveness of Egypt depends upon the annual rise of the Nile. This rising is caused by the rainfall on the Abyssinian Mountains and the districts of the Upper Nile. An ordinary rise at Cairo is about twenty-five feet. An excessive rise is liable to damage the embankments and crops of the higher levels, while a deficiency in the amount of water allows only a small area to be irrigated. Since the country has been under English influence, extensive works have been constructed so as to enable irrigation to be carried on throughout the year, particularly the great dam at Assuan.

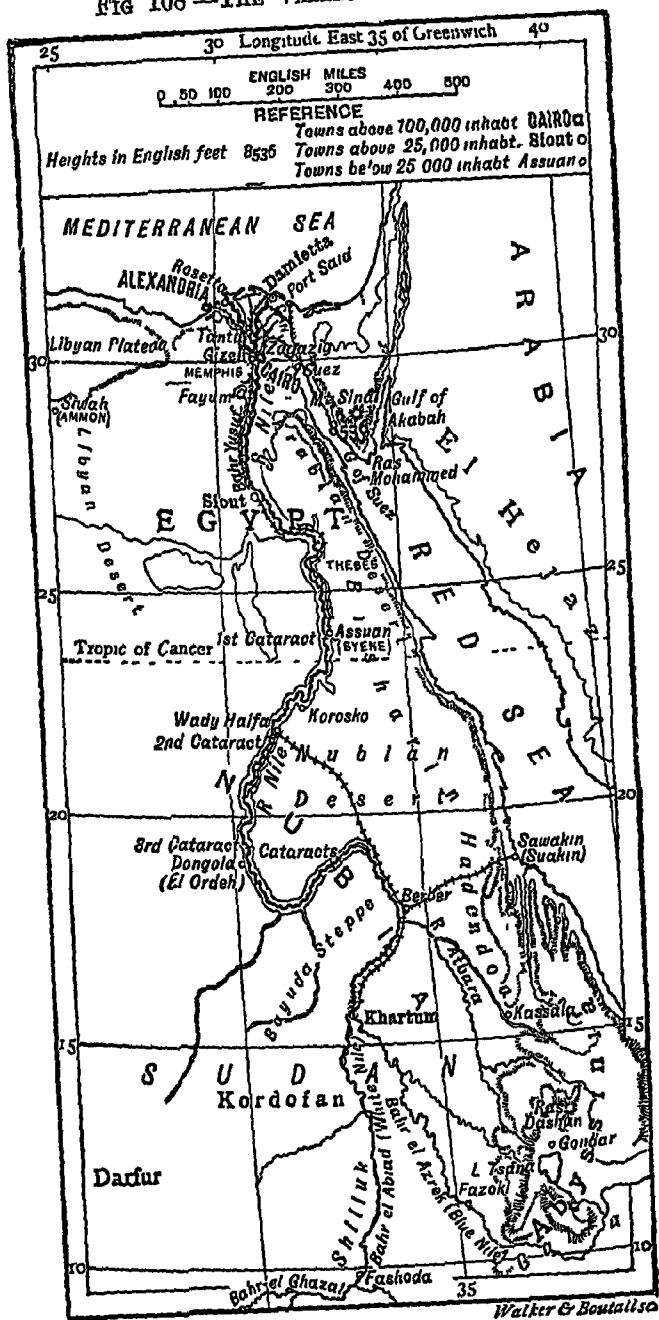
The principal crop is cotton. Egypt is exceeded only by the United States and India in the amount of cotton produced. Other important crops are maize, wheat, sugar-cane, and dates.

PEOPLE —The cultivators are called fellahin, and are mostly of Arab descent. The descendants of the old Egyptians are a Christian race known as the Kopts. There are in addition a considerable number of Bedouins, chiefly nomads. Population. About 11 millions.

MEANS OF COMMUNICATION —The Nile is the great waterway, and is navigable, without hindrance, to Assuan, where the first cataract is situated. In flood time both the first and second cataracts are navigable. The Mahmudieh Canal connects Alexandria with the Nile, while another canal unites the Nile with the Suez Canal.

The Suez Canal extends from Port Said on the Mediterranean to Suez on the Red Sea, and affords the nearest ship-route from Europe to

FIG 108—THE VALLEY OF THE NILE



Longmans & Co London & New York.

Southern and Eastern Asia It is 87 miles long, and was completed in 1869

Railways connect most of the towns of the Delta, and one line extends for several hundred miles up the Nile Valley

TOWNS—Cairo (654), the capital, is situated at the head of the Delta, and is the largest town in Africa. To the south are situated the famous pyramids of Gizeh. Alexandria (320) is the chief port. Rosetta and Damietta are situated near the two principal mouths of the river. Siout is the chief town in Upper Egypt. Assuan, Wady Halfa, and Karnak, where are the ruins of Thebes, are also noteworthy places.

THE EGYPTIAN SUDAN

Prior to 1884 Egyptian territory extended up the Nile Valley to the Equator, including the districts of Nubia, Kordofan, Darfur, &c. A revolt led to these territories being abandoned, but they were recovered on the defeat of the Khalifa in 1898.

The northern part is mostly desert, the Nile Valley being the only habitable district, further south the rainfall is more abundant, and the country loses its desert character.

Durrah, a kind of millet, and dates are the principal food-plants, sheep and camels the most useful animals.

Khartum, situated at the junction of the Blue Nile and White Nile, is the commercial capital of the district. Here the heroic General Gordon lost his life in 1885. Sawakin, the only port, is now occupied by the British.

POPULATION—About three millions.

The Sahara, with an area of 2,500,000 sq miles, is mainly under French influence and consists chiefly of a plateau, rocky in some parts and sandy in others, with depressions to the north and west. The evidence of fossils points to the fact that it was once the bed of a sea. The only habitable spots are the oases, where springs or underground streams furnish water for the date-palm and the coarse grasses.

Salt, obtained from the dried-up beds of lakes, is an important export to the Sudan.

EXAMINATION PAPERS

- A 1 What races inhabit Northern Africa, and what are their chief occupations?
- 2 Where is the cultivated land of Morocco situated? Say why this is so.
- 3 Arrange the States of Northern Africa (1) according to area, (2) according to population, (3) according to importance. Which of them are under European influence?
- 4 Describe the surface of Algeria.
- B. 1 Show how the French occupation has affected Algeria.
- 2 Where does the Sahara approach nearest to the Mediterranean? Give reasons why it does not approach so near towards the west.

- 3 What are the principal exports of Algeria?
- 4 Explain how the productiveness of Egypt is affected by the Nile
- C 1 What are the habitable districts of Egypt? What is their total area and density of population?
- 2 What are the chief means of communication in—(1) Morocco, (2) Algeria, (3) Tripoli, (4) Egypt?
- 3 What is the commercial value of the Suez Canal (1) to Egypt, (2) to India?
- 4 What is the most important crop in Egypt?
- D 1 Draw a map of North Africa and insert the following towns—Tangier, Constantine, Kairwan, Siout, Wady Halfa, Sawakin, Khartum, Alexandria, Algeria, Fez, and Tripoli?
- 2 What is meant by the term Egyptian Sudan? Say what you can of its climate, people, and products
- 3 What districts export salt, dates, leather, cotton, alfa-grass, ostrich feathers, iron ore?
- 4 Compare the products of North Africa with those on the European side of the Mediterranean Sea

THE SUDAN

GENERAL DESCRIPTION.—This term includes the portion of Central Africa lying between the Kong Mountains and the basin of the Nile. Owing to the abundant rainfall this is a fertile district, and in many parts is thickly peopled. Here is the true home of the Negro race, but a mixed race, the Fulbeh or Fulah, although not the most numerous, are the most enterprising and aggressive people of the Sudan. They have founded several powerful States in the Niger basin, of which Sokoto is the chief. Bornu, on the western side of Lake Chad, is the most powerful Negro state. Muhammadanism has now spread throughout the whole region.

The chief means of communication are the Niger and its tributary, the Benue, and by camel caravans from the States of Northern Africa.

The chief occupations are agriculture and cattle-rearing. Durrah is the chief food-plant. Maize, rice, and cotton are also extensively cultivated. The traffic in slaves is still largely carried on with Morocco and Tripoli.

Numerous towns are scattered throughout the Sudan, some of which have a large population. Among the most important are Kuka, the capital of Bornu, and Kano and Timbuktu, both great centres of caravan traffic with Northern Africa.

WESTERN AFRICA

GENERAL DESCRIPTION.—This is the district extending from the river Senegal to the Orange River. It is now almost exclusively under European influence, the only native States of importance were the kingdoms of Dahomey and Ashanti, on the Guinea Coast, and the Negro republic of Liberia, originally founded for freed slaves.

The coast region, from the Senegal to the Congo, has a hot moist climate, and is particularly unhealthy for Europeans. South of the Congo the coast-strip has a deficient rainfall. This arid district increases in width towards the south, where the Kalahari Desert extends inland to the river Lampopo.

1 BRITISH POSSESSIONS.—1 Northern Nigeria contains about 256,000 sq. miles and over 10,000,000 inhabitants, the great majority of whom are negroes.

The chief product of the coast country is palm oil, rubber, ivory, hides, ostrich feathers, &c, in the interior. The chief imports are cotton goods, hardware, provisions, and salt. The internal trade is carried on by caravans, but a railway has been constructed. The chief towns are Asaba, Rabba, and Zungeru.

2 Southern Nigeria. This contains also the old Colony and Protectorate of Lagos. Its area is about 77,000 sq miles and it has a population of about 7,000,000, of whom only about 1,000 are whites.

The chief products are palm oil, rubber, cocoa, cotton, coffee, gum, &c. The cotton industry is making rapid strides. Much of the trade is done by caravans, and there are about 200 miles of railway. The chief town is Lagos.

3 Gold Coast. This also includes Ashanti. Its area is about 80,000 sq. miles, with a population of about 1,500,000, of whom only about 700 are whites. The chief exports are palm oil, rubber, and cocoa. Gold is also being obtained in increasing quantities. The chief towns are Cape Coast Castle and Accra.

4 Sierra Leone. It consists of a Colony on the coast and a Protectorate inland, with a total area of about 32,000 sq miles and a population of over a million. It exports palm oil, ginger, rubber, &c. Freetown is the most important town and seaport.

5 Gambia. The colony is only 4 sq miles, with a population of about 9,000; but the Protectorate has an area of about 4,500 sq miles, with about 140,000 people. It exports ground nuts, hides, cotton, rubber, &c. Bathurst is the capital and seaport.

II FRENCH POSSESSIONS—France claims the whole of Western Africa from Cape Blanco to the Congo, excluding the British and German spheres of influence, and including the Western Sahara. The chief settlements are Senegal, of which Fort Louis is the capital, and French Equatorial Africa, which extends inland to the Nile basin. Dahomey is now a French protectorate. Abomey is the capital.

III PORTUGUESE WEST AFRICA.—This extends from the Congo to Cape Frio and inland to the Upper Zambesi. The area is about 500,000 sq miles. The highland region behind the aid coast district is a rich land with a healthy climate, and produces coffee, palm oil, and rubber.

Loanda is the capital and chief port. Benguela and Mossamedes are the only other important stations.

IV THE BELGIAN CONGO.—This State has an area of nearly one million sq miles, and includes most of the basin of the Congo. It is now practically under Belgian administration. The Congo is navigable to Matadi, from here rapids obstruct the navigation for about 200 miles. A railway has been constructed from Matadi to Leopoldville, above the falls, from whence the river is navigable for 1,000 miles to Stanley Falls, and has in places a width of ten miles.

The chief exports are palm oil, ivory, and rubber.

Boma is the principal port.

Native State—Liberia is an Independent Negro republic, founded in 1820 for freed slaves, lying south of Sierra Leone. Monrovia is the capital. The Kroomen, a native race inhabiting the coasts of Upper Guinea, make excellent sailors.

EXAMINATION PAPERS

- A 1 Give the boundaries of the Sudan. Account for its fertility.
 2 How is trade carried on in the Sudan, and what are the chief means of communication?
 3 What are the most important States of Central Africa, and where are they situated?
 4 Show how Western Africa is under European influence.
- B 1 What are the typical exports of Western Africa? and give the chief ports from which they are shipped.
 2 What are the principal British possessions in Western Africa? Name the chief towns.
 3 Give the situation of the following—Freetown, Port Louis, Loanda, Leopoldville, Rabba, Kuka, Stanley Falls, and Timbuktu.
 4 What are the two great waterways of Western Africa? Describe them.

BRITISH SOUTH AFRICA

The greater portion of Southern Africa is now under British control. It consists of colonies and protectorates. The principal divisions are :

The Union of South Africa, which includes the provinces of —

Cape of Good Hope (including Griqualand, Pondoland and Bechuanaland)	Sq miles	Whites	Coloured
	276,995	582,000	1,982,000
Natal	35,290	98,000	1,095,000
Orange Free State	50,400	175,000	352,000
Transvaal (including Swaziland)	110,000	420,000	1,265,000
Rhodesia	438,000	25,000	1,700,000
Nyassaland Protectorate	39,600	1,200	1,000,000
Bechuanaland Protectorate	275,000	1,700	1,230,000
Basutoland	11,716	1,400	401,000

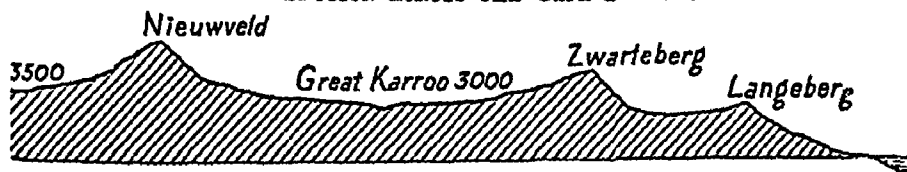
The whaling station of Walvisch Bay (Whale Fish), the only good harbour in German South-west Africa, also belongs to British South Africa.

COAST-LINE—The coast-line, extending from the mouth of the Orange River to the neighbourhood of Delagoa Bay is comparatively unbroken and possesses few good harbours. The western portion is particularly dreary and desolate.

The chief indentations are **St. Helena Bay**, **Table Bay**, and **False Bay** at the south-west corner, and **Algoa Bay** on the south. The **Cape of Good Hope** and **Cape Agulhas** are the most prominent capes.

RELIEF.—The terraced formation of the land in Northern Africa is repeated here to a more marked extent. In South

FIG 109.—SECTION ACROSS THE CAPE PROVINCE



Africa the land rises from the coast in three terraces, the edges of which present the appearance of mountain ranges on the seaward side. First comes the coast-strip, which on the south and east includes many fertile districts. The first terrace is a productive region extending northwards to the **Zwarteberg Range**. The second terrace is the chief wool-producing district of the colony, and extends to the main mountain range, which rises to a height of 8,000 ft, and is known as the **Nieuwveld**, &c. This range is continued towards the north-east as the **Drakenberg**

Mountains, which attain an elevation of over 10,000 ft. Beyond this range comes the third terrace, which falls slightly to the Orange River. Beyond this is the **Kalahari Desert**, a region of deficient rainfall extending northwards for a thousand miles.

The terraces are known as **Karroos** and slope slightly towards the interior. During the dry season the ground is baked hard and is destitute of vegetation, but with the advent of the rains the plants, whose roots are protected from the heat by a woody covering, spring up, and the plain is quickly covered with vegetation. The **Great Karroo**, on the second terrace, is from 60 to 70 miles in width. The rivers find then way to the sea through the edges of the terraces by deep gorges. The mountain ranges are massive in outline and flat-topped to a great extent.

RIVERS.—Deficiency of water is one of the drawbacks to South Africa. The streams of the south and west are torrents after the rains, but dried-up watercourses for most of the year. It is only where the rainfall is more abundant that the streams have a constant flow of water. Nearly all the river channels are obstructed by rapids, and are thus of but little service for navigation. There are three large rivers —

1 The **Orange River** rises in the **Diakenberg Mountains**, and flows in a westerly direction for over 1,000 miles to the Atlantic, forming for a considerable distance the northern boundary of Cape Colony. Its principal tributary is the **Vaal**.

2 The **Limpopo** rises in the **Transvaal**, forms the northern boundary of the State, and after describing a great curve of over 1,000 miles empties into the Indian Ocean to the north of **Delagoa Bay**.

3 The **Zambesi** rises in **Lake Dilolo**, and flows for a considerable distance through the **British South Africa Company's territories**. It then enters **Portuguese East Africa**, and reaches the Indian Ocean after describing a double curve of over 2,000 miles.

Of the minor rivers, the **Olifants** on the west, the **Gouritz** and **Great Fish Rivers** on the south, and the **Tugela** between **Natal** and **Zululand**, are among the most important.

CLIMATE.—The climate is dry on the whole, and exceedingly healthy. The coast district on the eastern side is, however, subject to fevers.

The rainfall varies greatly in different districts. The eastern side, which is under the influence of the trade-winds, has its rainy season from September to April; the south-western corner is beyond the influence of the trade-winds, and receives its moisture from the north-west winds of the Atlantic from April

to October. On the east side the coast range condenses the moisture and a plentiful rainfall occurs on the seaward side, this rainfall corresponding in time to the summer monsoon, and being brought by the same winds that supply India with rain during that season, on crossing the range the winds become comparatively dry, and the north-western part of the colony is almost rainless.

VEGETATION.—There are not many large areas covered with forests; flowers, especially heaths and bulbous plants, exist in great variety, grasses and herbs supply good pasture for cattle and sheep, fruits, both native and European, are extensively grown (the grapes of the colony are said to be the best in the world); and maize, wheat, millet, and tobacco are largely cultivated. Sugar is also an important product in Natal.

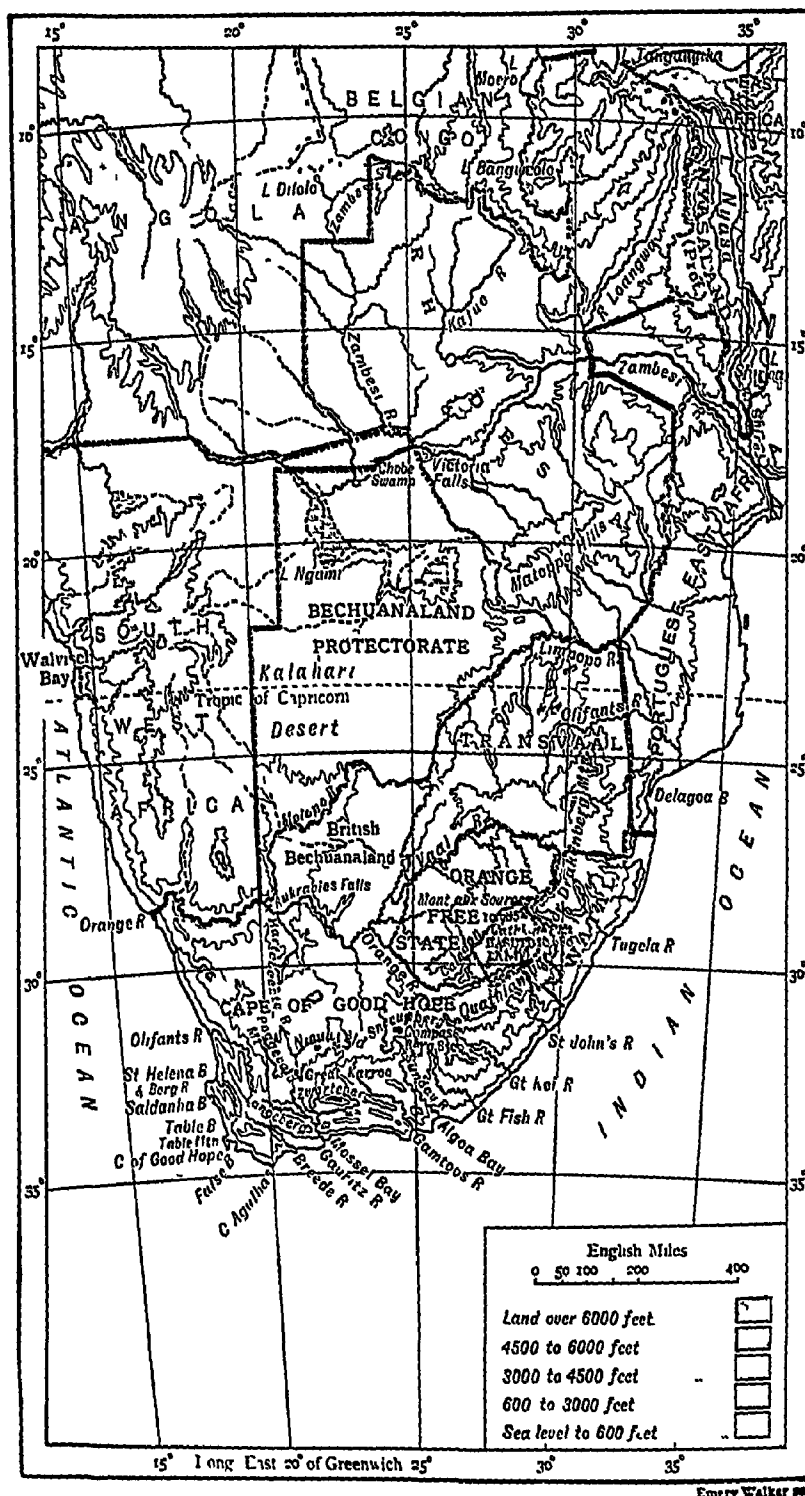
ANIMAL LIFE.—The larger wild animals are now scarcely found in the south. Leopards, hyænas, jackals, are the most destructive carnivora, vast herds of antelopes, zebras, quaggas, &c, live on the grass of the plains, and large baboons cause great damage to the gardens, ostriches, eagles and vultures, bustards, pheasants, partridges, and quails are found in great numbers, the python is the largest of the numerous varieties of snakes, many of which are very poisonous. Among the insects, the tse-tse fly, whose bite is fatal to horses, cattle, &c, mosquitoes, dragon-flies, and locusts may be mentioned.

The chief domestic animals are sheep, cattle, horses, Angora goats, and ostriches.

MINERALS.—The mineral wealth of South Africa is very considerable. The diamond mines of Kimberley are the most productive in the world, the goldfields of the Transvaal have a greater output than those of Australia, while the copper ore of Namaqualand yields a rich return of metal. Coal, iron, silver, lead, manganese, and other metals are also found, but are not worked to any great extent.

PEOPLE.—The colonists are mostly of Dutch and British descent. The natives belong to two races. 1. The Kaffirs, a tall, well-built, warlike race, who have offered at various times considerable resistance to British rule. They inhabit the eastern portions of South Africa and are now peaceably engaged in cattle rearing and agriculture. 2. The Hottentots and Bushmen of the western districts are a small, stunted race, and low in the scale

FIG 110—BRITISH SOUTH AFRICA PHYSICAL.



Emery Walker

of civilisation. The Hottentots rear large herds of cattle and fat-tailed sheep. The Bushmen are skilful hunters.

There are many Indian emigrants in Natal.

The chief occupations of the inhabitants are the rearing of sheep, cattle, and goats, for wool, hides, and hair; ostrich farming, mining, and agriculture including corn growing, vine culture, and sugar-planting in Natal.

MEANS OF COMMUNICATION.—Since the discovery of diamonds and gold the railways of South Africa have been largely developed. The principal are —

1. A line from Cape Town across the great Karroo, through the diamond fields, and on through Bechuanaland to Mafeking and Bulawayo, whence it has been continued to Salisbury, in Mashonaland. A branch has been laid between Bulawayo and Victoria Falls, and is being continued to the North.

2. Lines from Port Elizabeth, East London, and Durban, extend to the Orange Free State and the Transvaal.

3. A line from Delagoa Bay to the Transvaal has been completed, and another from Beua, in Portuguese East Africa, to Mashonaland has been completed as far as Salisbury, in Southern Rhodesia, where it joins up with the through line from Cape Town.

UNION OF SOUTH AFRICA

In 1910 the self-governing colonies of the Cape of Good Hope, Natal, Orange Free State and the Transvaal united as the Union of South Africa. The executive government is vested in the King, who is represented by a Governor-General and Ministers of State. Pretoria is the seat of the Government and Cape Town of the Legislature.

South-West Africa, formerly German, is now under the control of the Union.

The principal Provinces, with their chief towns, &c., are as follows. —

I. THE CAPE OF GOOD HOPE has an area of over 277,000 sq. miles, and a population of 2,500,000, of whom more than two thirds are natives.

The chief exports are wool, mohair, diamonds, copper, and ostrich feathers.

TOWNS — The capital is Cape Town (146), a fine city, with great trade, situated at the foot of Table Mountain. Port Elizabeth (33) on Algoa Bay, is the most important trading centre of the eastern part of the colony. East London is a rising port on the Buffalo River. Simon's Town on False Bay, is the South African naval station. Of the inland towns, Grahamstown (10), to the east of Port Elizabeth is the chief town of the eastern district. Kimberley (34), the centre of the diamond fields is the

largest inland town Beaufort, at the foot of the Nieuwveld Mountains, is the centre of the wool-producing district Paarl is situated in the midst of the wine-producing district in the south-west.

II. NATAL, with Zululand, has an area of about 35,000 sq miles, and a population of 1,200,000, most of whom are Kaffirs

The chief exports are wool, hair, hides, and sugar

Durban (70) is the principal seaport, Pietermaritzburg, in the interior, is the capital

Zululand —After the war of 1879, the military power of the Zulus was broken up, and their country subsequently became part of the Empire.

III. BECHUANALAND is a Crown Colony, with an area of 51,000 sq. miles. It is an open grassy country, inhabited by the Bechuanas, and well suited for cattle-rearing. Mafeking and Vryburg, both on the line of rail from Cape Town, are the chief towns.

The Protectorate of Bechuanaland extends north of the Crown Colony to latitude 22° S —275,000 sq. miles

Palapye, the largest native town in South Africa, is the chief town

IV. BASUTOLAND, a mountainous and fertile district, is inhabited by a warlike and industrious race of Kaffirs. It became a Crown Colony in 1884

V THE BRITISH SOUTH AFRICA COMPANY'S TERRITORIES or RHODESIA.—This is a vast region, divided into two parts by the Zambesi.

Matabeleland and Mashonaland, on the southern side of the river, are fertile, well-watered districts rich in minerals. In 1893 the aggressive action of the warlike Matabele led to a war, which resulted in their capital, Buluwayo, being captured and their power broken.

Salisbury, in Mashonaland, is the seat of the administration, and is connected by telegraph and railway with the Cape A railway from Beira, on the coast in Portuguese territory, has been completed as far as Salisbury and affords through railway communication from Beira to Cape Town

VI. NYASSALAND PROTECTORATE —North of the Zambesi, the district lying along the river Shue and to the west of Lake Nyassa, opened up by missionaries and the African Lakes Company, now forms the Nyassaland Protectorate. A good road

leads from the north of Lake Nyassa to the south of Lake Tanganyika, and gunboats are maintained on Lake Nyassa to check the slave trade and maintain order.

Zomba and Blantyre are the chief stations. The outlet for the trade of this district is by the Shire Valley to Chunde on the Zambesi.

VII. THE ORANGE FREE STATE.—This colony lies between the Vaal and Orange Rivers. It consists of rolling uplands, and contains a large proportion of fertile soil. The fine climate and good rainfall are favourable to pastoral and agricultural pursuits, and most of the inhabitants are farmers (Boers). The area of the colony is about 50,000 sq. miles (compare with Nepal), with a population of 500,000 (compare with the city of Haidarabad, Deccan) of whom about 175,000 are of European descent.

In 1836, a number of Boers who were dissatisfied with their lot in Cape Colony trekked across the Orange River and founded a Republic, which was annexed by the British in 1900 during the Boer war.

Industries.—The chief occupation of the people is agriculture, the chief crops raised being wheat and maize. Maize-flour, known as mealies, is the ordinary food of the farming population. Stock-raising is as important as farming, the colony possessing large numbers of horses, cattle and sheep. Ostrich-farming is also carried on.

Mining employs a large number of people. The minerals found are coal, diamonds, and gold, and the output of coal is steadily increasing in quantity.

Commerce.—Since the colony has been under British rule, trade has made steady progress. The chief exports are the products of the mines, diamonds being the most valuable, and the surplus agricultural produce—wheat and maize, and wool, hides, and skins. The imports are manufactured goods, *e.g.*, cotton goods, clothing, and hardware, and articles of food.

Towns.—Bloemfontein, near the centre of the colony, is the capital. It is connected by railway with the chief towns in the Cape Province, the Transvaal, and Natal. The population is about 34,000. Harrismith is a trading centre near the Natal border.

Ladybrand, near the borders of Basutoland, is the centre of a wheat-growing district.

VIII THE TRANSVAAL.—The Transvaal (=beyond the Vaal) lies to the north of the Orange Free State between

the Vaal and Limpopo Rivers. It is a high plateau of gently rolling uplands with a fertile soil. It has a fine bracing climate with an ample rainfall, and owing to the elevation above sea-level there is a great variation in temperature, and though in summer it is very hot in the daytime the nights are cool. The area is about 110,000 sq miles (compare with the United Provinces of Agra and Oudh), of which about 6,500 sq miles is Swaziland. The census of 1911 gave a population of about 1,700,000, of whom about 420,000 were of European descent. The whole population of the colony is about equal to $1\frac{1}{2}$ times that of Calcutta with its suburbs.

The Transvaal was first settled by Boer farmers who trekked from Cape Colony in 1836-7, and founded a Republic. In consequence of troubles with the natives it was annexed to the British Empire in 1877, but self-government, subject to the suzerainty of the British Crown, was restored in 1881. The discovery of gold in the colony led to a large inrush of British settlers, and disparity of treatment between British and Dutch led to the Boer war, in which the Orange Free State joined. The Transvaal was finally annexed in 1900, during this war.

Industries.—As in the Orange Free State the main occupation of the people is agriculture, but the Transvaal is better suited to stock-raising than to the growing of crops, as there are large stretches of natural pasture land. The most important crops are wheat, maize, and tobacco.

The wealth of the colony is obtained from its mines. The Rand Gold Fields are the most valuable in the world, the amount raised in a year being worth 60 crores of rupees. Other minerals worked are coal and diamonds.

Commerce—For a new colony the value of the trade of the Transvaal is very great, the imports and exports totalling $70\frac{1}{2}$ crores of rupees, of which the export of gold accounts for nearly three-fifths. The exports are the products of mines—gold and diamonds, and farms—wool, hides, skins, &c, and the imports are manufactured goods—textiles, machinery, &c, and foodstuffs.

Towns.—Johannesburg, on the Rand, is the largest town, and the centre of the gold-mining industry. The population is about 240,000.

Pretoria, a beautiful town lying about 30 miles from Johannesburg, is the capital.

32



EXAMINATION PAPERS

- A** 1 Name the British Colonies and Protectorates in South Africa
 2 Describe the relief of the Cape Province
 3 What are the characteristic features of the coast of South Africa?
 Name the chief inlets
 4 Why is the rainfall more abundant on the east of South Africa than on the west? Compare the rainfall with that of India
- B** 1 Name the three great rivers of South Africa, and describe their courses
 2 What are the Karroos, and what industries are connected with them?
 3 Give the situation of the chief ports of South Africa
 4 What are the most common plants, animals, and minerals of the Cape Province?
- C** 1 How would a traveller from India reach the following places:—
 Johannesburg, Salisbury, Vryburg?
 2 What are the chief industries in (1) the Cape of Good Hope, (2) Natal?
 3 Draw a map of South Africa and show the boundaries of all the British Colonies
 4 Why are the following important - Kimberley, Johannesburg, Grahamstown, East London?
- D** 1 What are the most important exports of (1) the Cape Province, (2) Natal?
 2 Say what you can of the Bushmen, Boers, Kafirs
 3 Describe the situation and products of the Transvaal
 4 Where are the following - Mashonaland, Walvisch Bay, Pretoria, Bloemfontein, Blantyre, Pietermaritzburg?

EASTERN AFRICA

GENERAL DESCRIPTION—This name is applied to the regions lying between Delagoa Bay and the Egyptian frontier. The whole district is now under the control of Portugal, England, and Italy

This part of Africa is at present but little developed. The coast district in many parts is very unhealthy. Goods are carried by human porters in British East Africa, the tsetse fly and the climate preventing the use of cattle and horses as beasts of burden. Farther north, in Somaliland, where the climate is drier, the camel is used.

The exports are of a similar character throughout the district, the chief being oil seeds, rubber, ivory, gums, and hides.

I PORTUGUESE EAST AFRICA—This district has an area of 299,000 sq miles, and extends along the coast from Delagoa

Bay to the river Rovuma, while inland it is bounded by the British possessions

Fruits of various kinds, grain, cotton, tobacco, and coffee grow in great luxuriance where cultivated

TOWNS.—Lorenço Marques, an excellent harbour on Delagoa Bay, is becoming an important centre of trade, as a railway has been constructed to the Transvaal gold-fields. Mozambique is the chief town of the northern district. Beira has a good harbour, and is the starting-point of a railway to Mashonaland. Quilimane, Sena, and Tete are stations on the Zambesi.

II. The TANGANYIKA TERRITORY (late German East Africa) —This extensive region has an area of 380,000 sq miles. It lies north of Portuguese East Africa, extending inland to Lakes Nyassa, Tanganyika, and Victoria Nyanza. A railway has been built from Dar-es-Salaam on the coast to Ujiji on Lake Tanganyika.

Dar-es-Salaam and Bagamoyo are the chief ports.

III BRITISH EAST AFRICA —This vast district covers an area of about 305,000 sq miles, and extends northwards to the river Juba, which is navigable for 400 miles. Inland it extends to the Nile.

For administrative purposes it is divided into The Kenya Colony and Protectorate and The Uganda Protectorate, both being under Imperial control. Mombasa is the chief town, and has a good harbour. The Uganda Railway connects it with Lake Victoria Nyanza.

THE ZANZIBAR PROTECTORATE —Zanzibar is an island off the coast of Tanganyika Territory. The Arab Sultan, who is now under British protection, once ruled over the neighbouring mainland. The town of Zanzibar (50) is the chief centre of trade in Eastern Africa.

THE SOMALILAND PROTECTORATE —The Somali Coast, a district bordering the southern shores of the Gulf of Aden, is a British protectorate. Berbera, the chief port, carries on a considerable trade with Harrar, in the interior. **THE WITU PROTECTORATE** at the mouth of the R. Tana.

IV ITALIAN POSSESSIONS —These consist of the Colony of Eritrea and a Protectorate on the Somali Coast.

Massaua, on the Red Sea, is the chief port and seat of the Government of Eritrea.

ABYSSINIA, an ancient empire, till 1896 an Italian Protectorate, has now recovered its independence. Its surface is exceedingly mountainous, and its people, who are nominally Christians, are chiefly engaged in pastoral occupations. Lake Demben, through which the Blue Nile flows, lies at an altitude of 6,000 ft. Gondar and Ankobar are two of the principal towns.

AFRICAN ISLANDS

Most of the African islands are mountainous, and of volcanic formation, and all belong to European nations.

In the north-west are the **Azores**, **Madeira**, and **Cape Verde Islands**, belonging to Portugal, and the **Canary Islands** to Spain.

Wine and fruit are the chief exports of the Azores and Madeira. The Canaries contain the famous volcano of Teneriffe, 12,000 ft high.

In the Gulf of Guinea there are several islands, of which the Spanish island of Fernando Po is the largest.

The British islands of **St Helena** and **Ascension** lie far out in the Atlantic. They are calling-places for ships.

In the south-east lie the large island of **Madagascar**, the British islands of **Mauritius** and the **Seychelles**, the French islands of **Bourbon**, and the **Comoro group**.

Madagascar, one of the largest islands in the world, has an area of 228,000 sq miles and a population estimated at 2,700,000. A range of mountains extends from north to south. The eastern side has a heavy rainfall and a luxuriant vegetation. The capital is **Antananarivo**, situated in the interior. The French sent an expedition in 1895, took the capital, and declared a protectorate over the whole island. In 1896 it was formally declared a French colony.

Mauritius and **Bourbon** export great quantities of sugar.

Socotra, off Cape Guardafui, belongs to the British Empire.

EXAMINATION PAPERS

- A. 1. Mention in order from the south the possessions of the European Powers in Eastern Africa.
 2. How is traffic carried on, and what are the chief articles of export in Eastern Africa?
 3. Give the name and situation of the chief ports in Eastern Africa.
 4. Why are **Lorenço Marques**, **Beira**, and **Zanzibar** important?
- B. 1. Describe the situation, surface, and people of **Abyssinia**.
 2. What are the chief groups of islands belonging to Africa? Where are they situated?
 3. What places are noted for sugar, wine, oranges, ivory, gums, coffee?
 4. Compare Eastern and Western Africa as to their products and the facilities for trade.

AMERICA

America is the name of the great mass of land in the Western Hemisphere, extending from 72° N lat. to 54° S. lat., that is over 126 degrees of latitude. The two great divisions are called North and South America, connected by the narrow Isthmus of Panama.

COMPARISON WITH THE OLD WORLD.—The area of America is only one-half of that of the great mass of land in the Eastern Hemisphere. Asia, Africa, and Europe are $32\frac{1}{2}$ millions of sq miles in extent; North and South America are $16\frac{1}{4}$ millions of sq miles. A line from Behring Strait to Cape Horn is about the same length as one from Behring Strait to the Cape of Good Hope; and these lines would pass through the main elevated portions of the land surface. The long slope of America is towards the Atlantic Ocean, while that of the Eastern Hemisphere is also towards the Atlantic. The short slopes are towards the Indian and Pacific Oceans. Towards the centre of each is a great inland sea—the Mediterranean in the Eastern Hemisphere and the Gulf of Mexico in America dividing the continents, and producing some similarity of shape. Thus, South America is like Africa in having its widest portion in the north, and tapering to the south with few openings. North America, like Europe, is much indented.

COMPARISON OF NORTH AND SOUTH AMERICA.—The two continents of the New World present many striking points of similarity.

(a) Each is broad in the northern part, and tapers towards the south.

(b) The eastern coast of each is generally low, with somewhat shallow water immediately adjoining, and is fringed with narrow islands, which make a double coast-line. The western coast is high, with deep water near the shore, and is much less indented than the east.

(c) Each has a great mountain system running throughout its whole length, and much nearer to the west than to the east, while a mountain system of less importance lies near to the east coast in each

(d) Great plains extend from north to south, bounded by high land on east and west

(e) Great rivers are a striking feature, and have a general resemblance in direction and size

NORTH AMERICA

America is called the New World because it became known to Europeans in comparatively recent times—viz. late in the fifteenth century. In reality much of the continent consists of very ancient rocks, and there are traces, especially in Mexico, of early civilisation. The first Europeans known to have visited America were the Norsemen, who in the tenth century came to the eastern shores of the continent by way of Iceland and Greenland. But it was in 1492 that Christopher Columbus, sailing west to find a shorter route to India, accidentally discovered the islands to which he gave the name of the **West Indies**. From this time an impetus was given to American exploration, until in the seventeenth century the first English colony was formed there. Since its settlement by Europeans the history of North America has been one of steady progress and advancing prosperity

BOUNDARIES AND EXTENT.—Except for the narrow isthmus of Panama, only 42 miles wide, North America is bounded on all sides by water—on the north, the **Arctic Ocean**; on the west, the **Pacific Ocean**, on the east, the **Atlantic Ocean**.

The area, including Greenland and the northern islands, is about $9\frac{1}{2}$ millions of square miles, rather more than half the area of Asia. America is within almost the same latitudes as Asia, the northern coasts of both continents lying within the Arctic Circle, and the latitude of Panama corresponding with that of Cape Comorin. The greatest length from Point Barrow to Panama is about 4,300 miles, the greatest breadth about 3,100 miles.

COAST-LINE.—North America has many more indentations and a greater length of coast-line than South America. The three northern continents—Asia, Europe, and North America—have a much greater proportion of coast-line to area than the

three southern continents—Australia, Africa, and South America. The east coast is washed towards the south by the warm Gulf Stream, which takes its name from the Gulf of Mexico, and along its northern shores by the cold Arctic Current. Where these two meet—about the latitude of Newfoundland—fogs prevail.

The Arctic Coast—The northern coast of America has been explored under enormous difficulties, the seas being icebound nearly all the year round. Much of the exploration has been accomplished in connection with attempts to reach the North Pole, a feat which was first achieved by Commander Peary, an American, in 1910. Many of the seas and lands bear the names of intrepid explorers, some of whom gave their lives in the effort to fill in the map of the Arctic regions—Hudson, Banks, Baffin, Davis and Parry. The shores are high and bold in Alaska, the termination of the great mountain chain of the continent, but they are low and consist of tundras in British North America. Off the coast is the Arctic Archipelago, with several large islands and many smaller ones. The largest is Baffin Land, separated from Greenland by Baffin Bay and Davis Strait. The chief river is the Mackenzie. All these coasts are very much broken, and glaciers come down to the water's edge, from which in summer icebergs break off and float into the North Atlantic causing fogs and impeding navigation.

The Atlantic Coast.—There are two large openings on the east of British North America. The shallow Hudson Bay is the submerged portion of a great plain extending from the Highlands of Labrador to the edge of the western plateau. It receives the waters of many rivers which drain a large number of lakes. The bay is land-locked by Southampton Island and Baffin Land, and is frozen over in the winter. It connects with the Atlantic Ocean by Hudson Strait. The latitude of 60° N. passes through Cape Farewell, the southern point of the large island of Greenland, and Cape Chidley in Labrador. The coasts of Greenland and Labrador have many fiord-like indentations and belong to the tundras.

The second great opening is the Gulf of St. Lawrence, containing the islands of Newfoundland, Cape Breton, Prince Edward and Anticosti. Into the gulf flows the River St.

Lawrence, bringing with it the waters of the greatest system of fresh-water lakes in the world. The estuary is not altogether free from ice in the winter. The peninsula of Nova Scotia encloses the Bay of Fundy, which is so situated as to receive one of the highest tidal waves in the world. Nova Scotia terminates in Cape Sable.

The eastern coast of the United States is fringed with islands, forming a double coast-line. It consists of three curves, the first from the Bay of Fundy to Cape Cod, the second from Cape Cod to Cape Hatteras, and the third from Cape Hatteras to Cape Sable at the south of the Peninsula of Florida. The first bend contains Massachusetts Bay, on which stands Boston, and Cape Cod Bay, where the Pilgrim Fathers landed in 1620. In the second curve are Long Island, with Brooklyn, opposite which stands New York, and the extensive Chesapeake Bay, into which flows the Potomac, with Washington upon its banks.

Passing through Florida Strait, between Cuba and the mainland, the Gulf of Mexico is entered, with a low, damp, unhealthy coast, fringed with islands and lagoons and bounded seawards by the West Indian Archipelago. Two great river mouths are passed, those of the Mississippi and the Rio Grande, the delta of the former is steadily pushing itself out to sea. The Gulf of Mexico gives its name to the Gulf Stream.

Geographically the continent of North America terminates at the Isthmus of Tehuantepec, between Campeachy Bay and the Gulf of Tehuantepec. Here the saddle between the North American mountain ridge and the highlands of Central America descends to within a few hundred feet of sea-level.

The Pacific Coast is much more regular than the Atlantic. In Mexico is the long narrow Gulf of California, bounded by the peninsula of the same name which terminates in Cape San Lucas. The coast of the United States has the Los Angeles group of islands, and the port of San Francisco standing on the harbour known as the Golden Gate. The shores of Canada and Alaska are very broken, with innumerable indentations and islands. The channels between the islands and the mainland are protected from wind and storm and provide excellent fishing. The largest islands are Vancouver, separated from British Columbia by Queen Charlotte Sound, Queen Charlotte Island,

and Sitka. From the south-western corner of Alaska a long peninsula juts out which is continued in the Aleutian Isles, enclosing the Bering Sea. The continents of North America and Asia are separated by Bering Strait.

RELIEF.—From the mouth of the Mississippi a depression extends northward almost without interruption to the Arctic Ocean, forming the Valley of the Mississippi and the basin of the Red River of the North, and being occupied in its northernmost portion by numerous lakes.

Westward from the Mississippi Valley the surface gradually rises by rolling plains called prairies to the Great Plateau which occupies most of the western half of North America. This plateau is crossed by numerous mountain ranges, generally from north-west to south-east, of which the Rocky Mountains form the chief. The plateau is bordered on the west by the Coast Range and Cascade Range. The Sierra Nevada lies a little to the east of these ranges, and parallel with them. The greatest height is reached in Alaska, where Mt. St. Elias is 19,500 ft. high. In the United States are many peaks in the Rockies, and the Sierra Nevada, between 14,000 ft and 15,000 ft high. In Mexico some of the peaks reach a height of 18,000 ft.

The Appalachian or Alleghany Mountains stretch from the mouth of the St. Lawrence for about 900 miles in a south-west direction, and comprise several parallel ranges with long valleys between. The highest point is Black Dome, about 7,000 ft.

PLAINS.—The prairies lie between the lowlands of the Mississippi Basin and the edge of the Great Plateau.

The Eastern Lowlands lie between the prairies and the Appalachians.

The Northern Lowlands lie along the Arctic Slope, and resemble the tundras of Russia and Siberia.

RIVERS.—The position and direction of the highlands of North America determine the courses of the great rivers which flow outwards to all the surrounding seas. The main watershed of the continent follows the ridge of the Rocky Mountains, which separates the rivers of the Pacific slope from those flowing into the Arctic and Atlantic Oceans.

FIG. 112.—NORTH AMERICA • RELIEF.



1. **Rivers of the Pacific Slope.**—The rivers flowing into the Pacific Ocean have short rapid courses, cutting their way through the mountains by deep gorges called cañons. In the United States are the **Columbia**, the **Sacramento**, and the **Colorado**, which empties itself into the Gulf of California. The **Yukon** also rises to the west of the Rocky Mountains. After passing the Klondike goldfields it bisects Alaska by a wide stream, navigable in summer, but frozen over for most of the year. It falls into the Behring Sea.

Subsidiary watersheds divide the rivers east of the Rocky mountains into separate systems.

2. **The Arctic Basin**—The watershed extends from Robson's Peak along the north of the Churchill River, and the basin includes the rivers flowing into the Arctic Ocean and the northern half of Hudson Bay. The **Mackenzie** is the largest river. It drains many large lakes, but like the rivers of Siberia it is frozen for many months and is commercially unimportant.

3. **The Saskatchewan Basin**—The watershed on the south of this basin corresponds roughly with the land boundary between Canada and the United States, as far as Lake Superior. The basin includes the **Nelson River**, which receives the waters of the **Saskatchewan River** and the **Manitoba** system of lakes, the **Churchill** and **Albany**, and other rivers flowing into the south of Hudson Bay.

4. **The St. Lawrence Basin** lies between the Labrador Highlands and the Appalachian Mountains. The main stream drains the Great Lakes and receives numerous tributaries chiefly on the left bank.

5. **The Gulf of Mexico Basin**—The chief river is the **Mississippi**, which, with its many tributaries, drains an area almost as large as the Indian Empire. The **Mississippi** is 2,400 miles in length, but the source of the **Missouri**, the longest tributary, is more than 4,000 miles from the sea. The other large river falling into the Gulf of Mexico is the **Rio Grande del Norte** (Great River of the North) which divides the United States from Mexico for a considerable distance.

6. **Rivers of the Atlantic Slope.**—The watershed is the

Appalachian Chain. The rivers are all of moderate length (average about 400 miles), but all form good harbours at their mouths, and are navigable for considerable distances. The most important are the Hudson, Delaware and Potomac

7. Inland Drainage Basin — This is on the plateau near the parallel of 40° N. The streams flow into Great Salt Lake and other smaller lakes.

For a description of these streams, *see* chapters on the separate countries

LAKES.—A very considerable portion of the surface of the northern half of North America east of the Rocky Mountains is occupied with lakes.

The largest and most important are the great lakes which drain into the river St Lawrence, viz Superior, Huron, Michigan, Erie, and Ontario. Superior is the largest fresh-water lake in the world, having an area of 32,000 sq. miles, a third as large again as Ceylon, and the total area of the five lakes is about 100,000 sq. miles. These lakes are of great commercial importance. Of the other Canadian lakes, Great Bear Lake, Great Slave Lake, Deer Lake, and Athabasca are drained by the Mackenzie into the Arctic Ocean, and Lake Winnipeg by the Nelson into Hudson Bay.

All of these lakes are either completely or partly blocked by ice in winter.

CLIMATE AND RAINFALL.—(a) Throughout North America (except Mexico and Central America) great extremes of temperature are experienced.

Causes —1. The great extension of the continent to the north and south.

2. The absence of a range of mountains from east to west to bar cold northern or hot south winds. A study of the Isotherm maps will show the great range from north to south of summer heat and winter cold

(b) The western coast is of higher average temperature than the east. See January Isotherm map on p. 385

Causes.—1. The prevalence of warm western winds from the Pacific.

2 The existence of a polar current on the east

3 The general direction of the great mountain system causes it to act as a barrier to prevent the cold winds from reaching the western region.

(c) The rainfall is generally abundant on the west coast, in the lowland plains east of 100° W. long., and along the Atlantic Slope. It is scanty in the Plateau region, in places between the Rockies and the Western Mountain ridges—*e.g.* the Mohave Desert in California—with large districts in Texas and Montana, extremely so.

Causes —1. The moist west winds bring the rain to all the coast north of 40° N. lat. as far as Alaska, where it is very heavy. See Rainfall maps on p. 384.

2 The east winds from the Atlantic and the Gulf of Mexico bring much moisture to the Eastern States and the Lower Mississippi basin.

3. The height of the western ridges, Sierra Nevada, &c., condenses most of the moisture before the clouds pass over to the eastward.

Local Peculiarities.—1 'Hot or cold waves' are common and sudden, and may extend over great distances. The cold winds are known as **Blizzards**

2. Cold winters extend far to the south. Even in the Gulf States (30° N.) frost is not uncommon, and the cotton shrub has to be planted annually.

3. Excessive heat and cold on the Desert Plateaux, owing to the height and dryness.

4. Very violent winds, called tornadoes, are experienced in the great plains, causing much destruction.

5. The atmosphere is generally very bright and clear, owing to the dryness of the winds that sweep over the continent from the west.

Comparison with the Old World —1 As in the Old World, the west coast is warmer than the east, from causes stated above

2 The west of Europe is warmer than the west of North America

3 The east of North America is warmer than the east of Asia

PRACTICAL EXERCISES

1 Winnipeg is in the same latitude as the western end of Cornwall. Why is its winter temperature so much lower?

2 From a study of the maps on pp 384-5 compare winter and summer climates of New York and San Francisco as regards temperature and rainfall

3 What ranges of winter temperature lie between New Orleans and Toronto? [See Map p 385]

4 How do you account for the small winter rainfall of the central part of North America?

5 Which parts of North America would you expect to be more or less desert from a study of the rainfall and isotherms?

6 Make a sketch, continuing July isotherms of 50° and 60° across Western Europe. Note any peculiarities as to the latitude these isotherms reach.

FIG 112b—NORTH AMERICA WINTER RAINFALL,
DECEMBER TO FEBRUARY

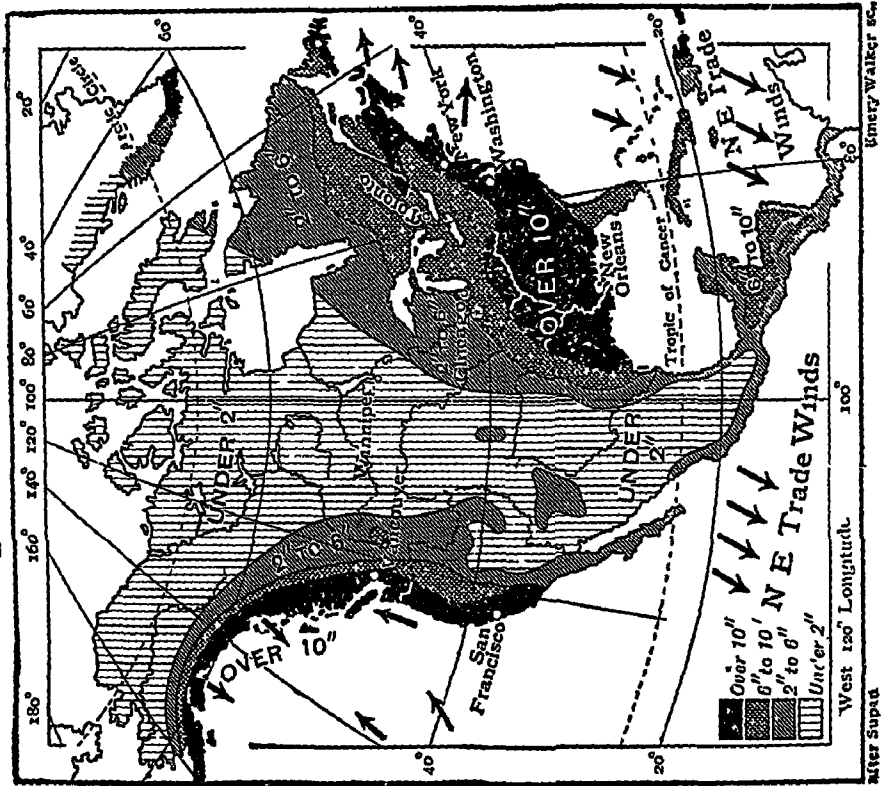


FIG 112a—NORTH AMERICA, SUMMER RAINFALL,
JUNE TO AUGUST

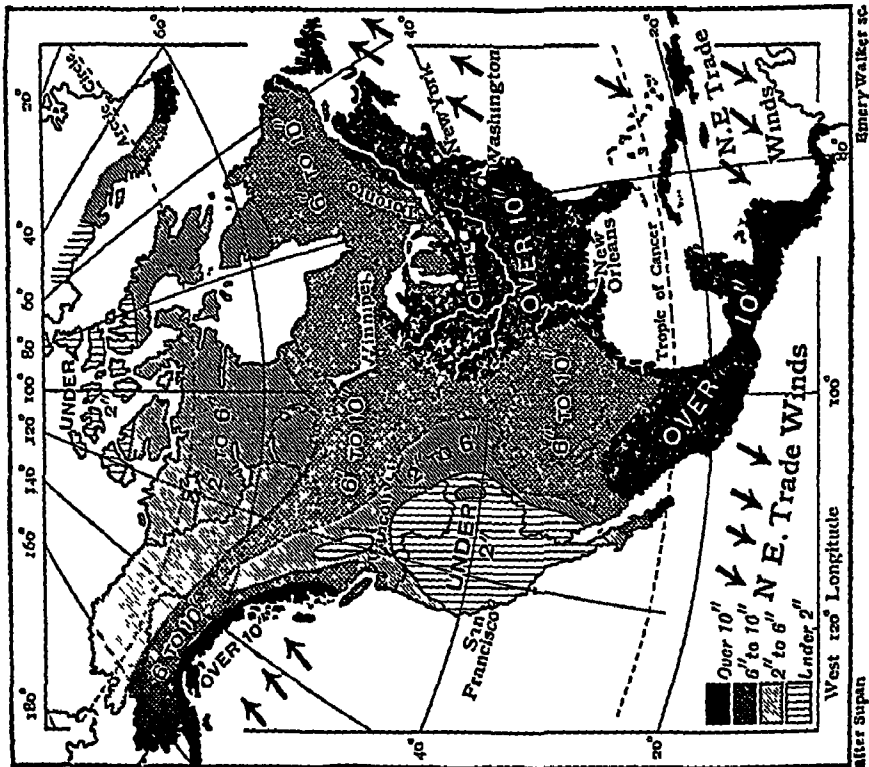


FIG 112c — NORTH AMERICA JULY ISOTHERMS.

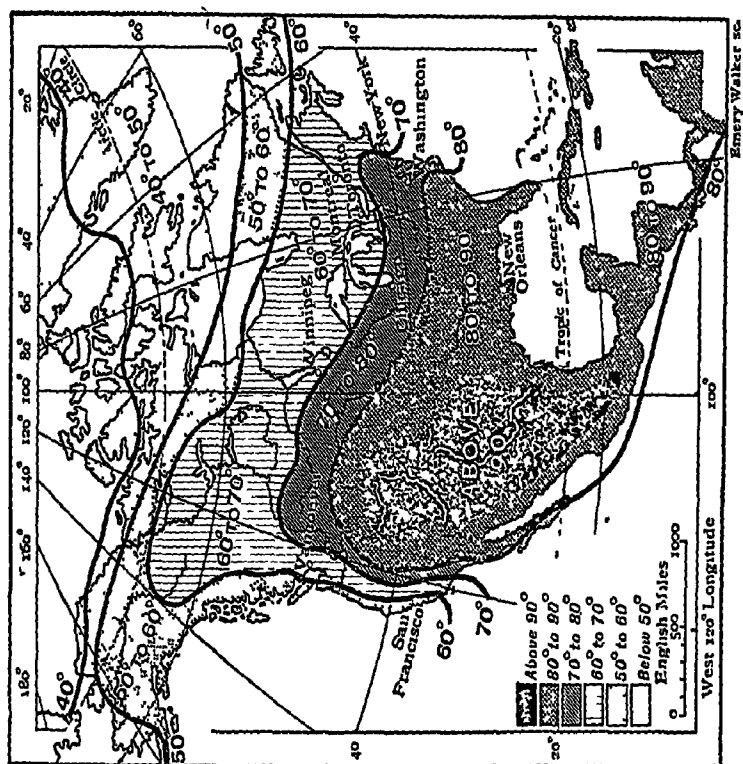
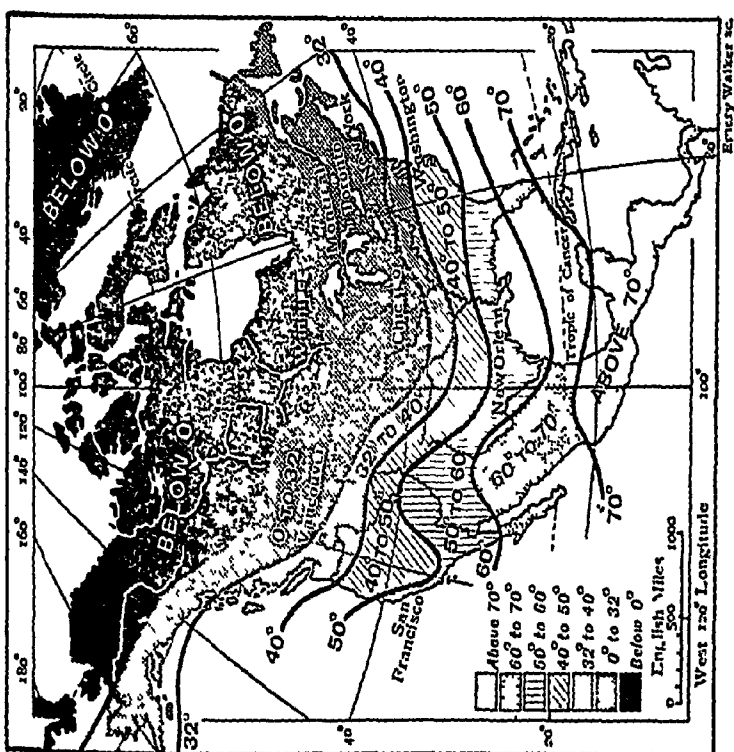
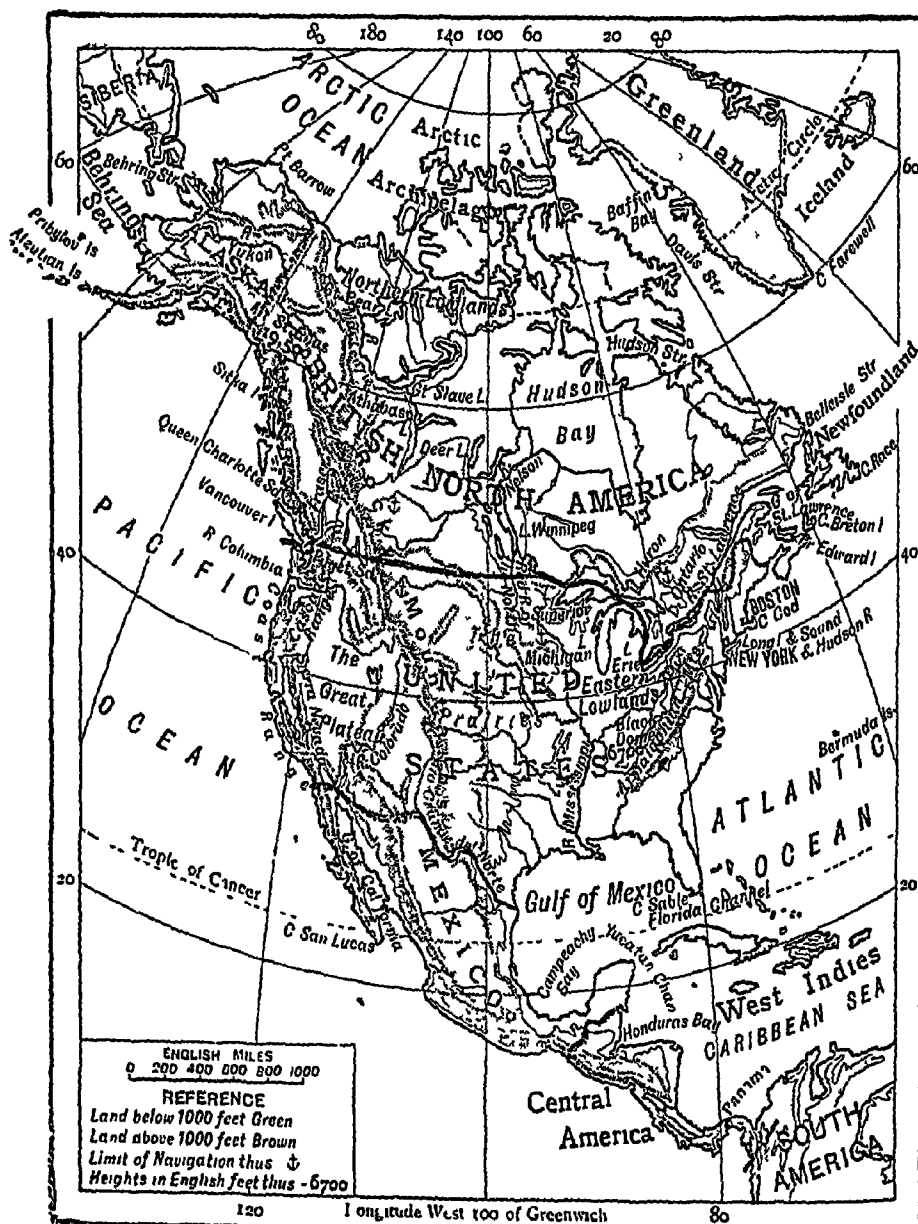


FIG 112c — NORTH AMERICA JANUARY ISOTHERMS.



7 Continue the winter isotherms of 50° , 40° , and 32° across to Western Europe. What differences of temperature do you observe comparing latitude with latitude?

FIG 113 — NORTH AMERICA PHYSICAL AND POLITICAL



Walker & Boutwell sc

Longmans & Co London & New York.

SOIL—East of the Rocky Mountains the soil is generally productive, even over large areas on the plain of British North America which have been considered unfit for cultivation; but

the crops there and in the northern parts of the United States are liable to injury from early frosts.

There is a great extent of very barren soil upon the Great Plateau, where the very slight rainfall renders successful cultivation impossible except by irrigation. Along the northern coasts the soil is frost-bound during the greater part of the year, and at some little distance from the surface is never thawed.

PRODUCTIONS.—1 **Vegetable.**—When discovered by Europeans, North America possessed many valuable plants, three of which—viz. tobacco, maize, and potato—have been since widely cultivated in the Old World. Besides these were cotton, vine, and many excellent timber trees, as firs, pines, cedars, oak, and maple. Numerous plants have been introduced from the Old World, and form important crops, as wheat and other cereals, sugar-cane, and coffee.

2 **Animal.**—The animal products are almost all derived from the domestic horse, cattle, sheep, and pigs, all of which have been introduced by Europeans. Wild animals were once very numerous, but are fast diminishing as the land is occupied and cultivated. The most valuable product of wild animals is furs, from the seal, beaver, and many smaller animals. The bison, or buffalo, which a few years ago roamed over the western plains in great herds, is now extinct as a free wild animal. The chief animals of the chase are the elk tribe, deer, panthers, lynxes, and wolves, in the United States and British North America. In Mexico and Central America are many monkeys and other tropical animals. Birds are very numerous and in great variety, from the wild swans, geese, turkeys, &c, of the temperate and Arctic regions to the humming birds of the tropics. Fish good for food are plentiful in salt and fresh water—the cod, salmon, shad, and oyster are some of the most valuable.

3. **Mineral.**—Almost every valuable mineral exists in North America in large quantities. The precious metals, gold and silver, have been freely obtained amongst the western mountains, though the production of the former is now less than it was some years ago. Coal and iron are abundant in many parts of the lowland regions. Copper, quicksilver, petroleum and natural gas, and salt are worked in many districts.

COMMUNICATIONS AND COMMERCE.—The waterways

FIG 113a—NORTH AMERICA
DENSITY OF POPULATION

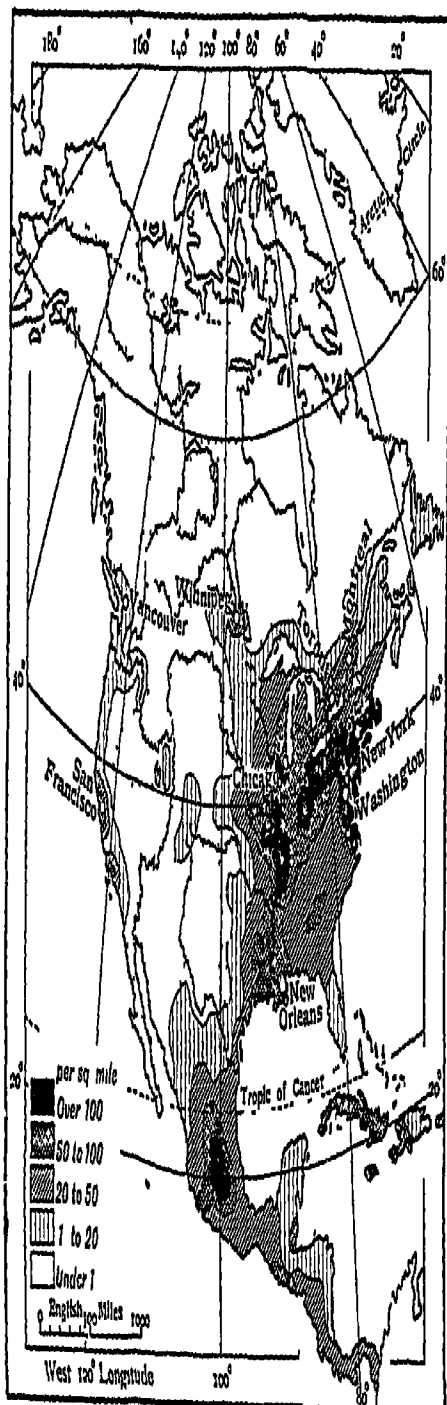
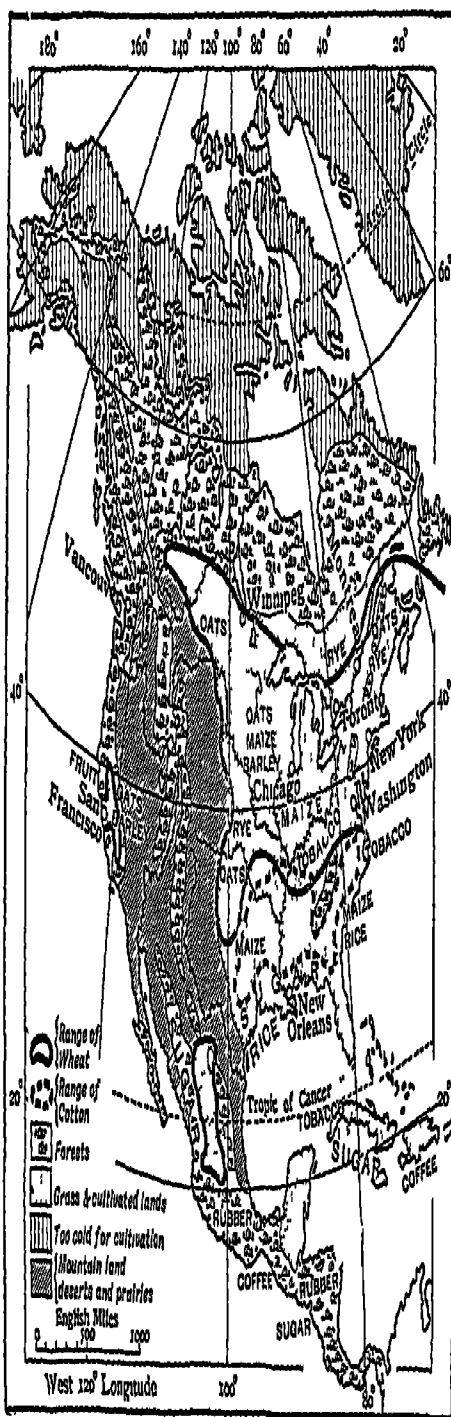


FIG 113b—NORTH AMERICA
VEGETATION AND VEGETABLE PRODUCTS



of North America are of great commercial importance. All the great rivers are navigable—the Mississippi as far as St. Paul, the St. Lawrence as far as the head of Lake Superior, and the rivers of Canada are largely utilised for internal communication. The ports on the great Lake system have traffic equal to two-thirds that of New York.

Canals have been constructed where rapids or waterfalls render river navigation difficult.

The railways of North America are very important. Six trunk lines cross the continent, connecting the Atlantic and Pacific Oceans, and Japan is four days nearer to England by the western than by the eastern route.

Proximity to Europe accounts for most of the seaports being on the east coast, the United Kingdom taking two-thirds of the total exports of the United States and about an equal share of those of Canada. The Pacific trade is, however, rapidly increasing.

PEOPLE—The native inhabitants are known as 'Indians,' having received this name from the first European explorers, who had mistaken the country to which they had arrived. These people still form the majority of the population in Mexico and Central America. In the United States they are comparatively few, and reside mostly on lands set apart for them, called reservations. Some of the tribes have made considerable advance in civilisation, whilst others are still little better than savages. In British North America the natives roam freely through the great forests and plains, hunting fur animals.

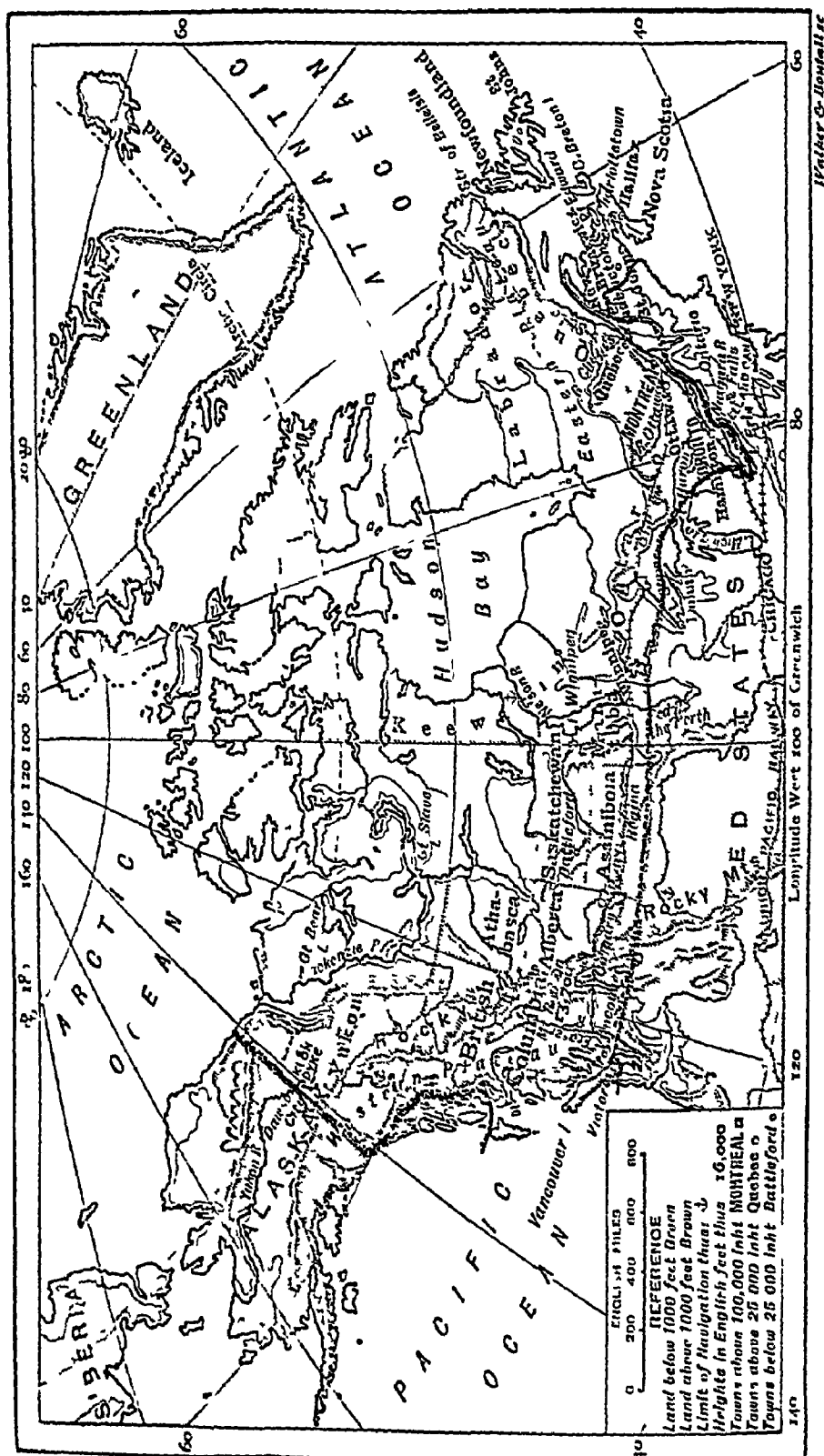
Europeans, descendants of immigrants, form the great bulk of the population, the most numerous being of British descent. There are also many Germans, French, and Spanish, and considerable numbers of other European peoples. Immigration still goes on, restrictions are placed upon it in the United States, but there is still great scope for people to aid in opening up the interior of Canada.

The planters of the southern States formerly imported much negro slave labour from Africa to work in the unhealthy plantations of the lower Mississippi, and the result is a large negro and mixed coloured population. There are also some Chinese, chiefly on the western coast.

THE COUNTRIES IN NORTH AMERICA, WITH THEIR CAPITALS

<i>Country</i>		<i>Capital</i>
The Dominion of Canada	} British North America {	Ottawa
Newfoundland		St. John's
The United States		Washington
Mexico		Mexico

FIG 111—BRITISH NORTH AMERICA PHYSICAL AND POLITICAL.



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Walker & Duffell

Guatemala	}	States of Central America	{	Guatemala
San Salvador				San Salvador
Honduras				Tegucigalpa
Nicaragua				Managua
Costa Rica				San Jose
British Honduras				Belize
Panama				Panama

PRACTICAL EXERCISES

- 1 What are the reasons for the dense population on the eastern side of the United States ?
- 2 How do you account for the dense population along the Mississippi valley ? A study of the vegetation and rainfall maps will show this
- 3 Which are the great wheat producing districts of North America ?
- 4 What are the chief crops of North America ? Which is the chief seaport for the export of cotton ?

BRITISH NORTH AMERICA

GENERAL DESCRIPTION.—The British dominions in North America include the whole of the continent north of the United States, except the United States territory of Alaska, in the extreme north-west, and Greenland, in the north-east, which, so far as is habitable, is Danish territory.

The area of British territory is nearly $3\frac{1}{2}$ millions of square miles, or about twice as large as the Indian Empire. Much of this extends so far to the north as to be unfit for the growing of crops, and, consequently, the population of a very large district is, and must remain, very scanty. On the other hand, great areas possess fertile soil, upon which the chief European food-plants flourish freely, even the vine being successfully reared in the southern districts. This fertile portion extends along both banks of the St Lawrence and westward, skirting the great lakes to the Rocky Mountains.

The rainfall is considerable, and the snowfall heavy over the greater part of British North America, and there is a great accumulation of water in the many large lakes which lie mostly on the plains to the east of the Rocky Mountains. The drainage from these lakes flows northwards and eastwards, forming great rivers, which afford valuable means of communication in summer, but are frozen in winter. A large part of the surface is covered with forests, which supply the timber that forms a source of great natural wealth, and are inhabited by tribes of Indians, who live by hunting fur animals.

BOUNDARIES.—North.—Arctic Ocean. East.—Atlantic Ocean. West.—Pacific Ocean. South.—The boundary is partly natural, through the middle of the great lakes, and then westwards along the 49th parallel of N. lat. to the Pacific, and eastwards by the river St. Lawrence to 45°, where it crosses to the right bank of that river, and touches the north-eastern part of the United States.

RELIEF.—The surface is mainly in three divisions.—

(a) The Western Plateau, of which the Rocky Mountains form the eastern boundary

(b) An Eastern Plateau, of less elevation, which stretches from the Labrador coast westwards, and forms the platform upon which lie the great lakes, of which Superior is the chief.

(c) An intervening Lowland, with slopes to the Arctic Ocean and to Hudson Bay.

MOUNTAINS.—The Rocky Mountains, with Robson Peak 13,700 ft., and many other peaks between 11,000 and 13,000 ft.

PLAINS.—The great lowland region of British North America is varied in the character of its surface and productions. Thus, in the north are extensive districts that are frost-bound almost all the year, and produce little beyond lichens and Arctic plants. Bordering these to the south and west is a wide forest belt. To the south of the forest region lies the rich lowland of Manitoba, and westward to the Rockies are rolling treeless prairies, which are largely capable of cultivation.

RIVERS AND LAKES—The rivers and lakes of British North America form three chief systems, which drain respectively to (a) the Atlantic Ocean, (b) Hudson Bay, and (c) the Arctic Ocean. The rivers of the Pacific Slope are entirely separated from these systems. Though the lakes lie at no great elevation (Superior is only 600 ft. above the sea), each system descends by a series of steps, and, consequently, most of the rivers are impeded by rapids and cataracts.

(a) The St. Lawrence drains the system of lakes which are distinguished by the name of the Great Lakes. These are Superior, Huron, Michigan, Erie, and Ontario, of which Huron and Michigan are at the same level. The latter is entirely in the United States.

From its extreme sources the St. Lawrence is 2,000 miles in length, but from Lake Ontario it is only 700 miles to the sea. Of the various con-

neching rivers, the most famous is Niagara, which flows from Erie to Ontario (33 miles), and forms in its course the great Falls of Niagara, over 150 ft in height. The various rapids are avoided by canals, and large vessels can now pass from the sea to Duluth, a port at the western end of Superior. Many tributaries join the St Lawrence on both banks, some of which are considerable rivers. The chief is the river Ottawa on the left, upon which stands Ottawa, the capital of the Dominion of Canada. Many important towns stand upon the banks of the river or connected lakes, the largest being Montreal and Quebec, the most famous in history.

(b) The Nelson is the chief river entering Hudson Bay. This river carries off the waters of some large streams that rise in the Rocky Mountains, and also of the Red River of the North. It drains many lakes, of which the chief is Winnipeg. Navigation is hindered by rapids at a short distance from the mouth.

(c) The Mackenzie is a vast stream that drains many great lakes which are fed by rivers from the Rockies. The chief lakes are the Great Slave and Great Bear.

Of the Pacific Slope rivers, the only one of importance in British North America is the Fraser, in British Columbia, which is of considerable length (having a circuitous course), but is very rapid and variable, and not of much use in navigation.

CLIMATE—The differences in climate are great, British North America having over the whole of its surface a cold winter, while even in far northern districts the summer heat is considerable. The latitude of British North America corresponds to that of Siberia, but the climate is on the whole less extreme. The varieties of climate experienced are due to several causes.

(a) The height of the western mountain region prevents the moderating influence of the winds from the Pacific from affecting any large area. Consequently, the western coast has a much milder climate than the plains bordering upon the Rocky Mountains.

(b) The eastern coast comes under the influence of a cold polar current. Hence Labrador, a large district in the same latitude as Great Britain, is almost wholly unfit for European settlement. Also the estuary of the St Lawrence, which nowhere reaches lat 50° N, is impeded with ice every winter, and the provinces bordering upon it experience severe frost and snow.

(c) The great lowland region lies exposed to the cold of the Polar regions and suffers from very cold winters while, on the other hand, the absence of lateral highlands allows free play to the southern hot winds in summer. As a result of this, crops ripen very quickly, and are successfully reared in places where the summer is very short.

FERTILITY OF SOIL—The bulk of the fertile soil lies

along the banks of the St. Lawrence, and particularly in the district lying between Huron, Erie, and Ontario; in the Gulf provinces, viz. New Brunswick, Nova Scotia, and Prince Edward Island; and in Manitoba and parts of the other provinces to the west of Lake Superior. The greater part of the plains to the north and east of the forest belt is barren, as are also Labrador and much of Newfoundland. British Columbia is mostly elevated, and contains only a small proportion of fertile soil, but Vancouver Island is productive

As has been shown in the paragraph upon climate, a great part of the Dominion suffers occasionally from the too early approach of winter, even where the soil is naturally fertile. This makes farming risky in the north-western provinces, for, while in a favourable year excellent crops may be safely harvested, in another year severe damage may be inflicted by frosts before harvest

PRODUCTS.—1. Vegetable.—Natural.—Timber covers vast districts, and is the most valuable export. Sugar is obtained from the juice of the maple tree. Grass on the western prairies affords food for many cattle, and is also converted into hay.

Cultivated.—Wheat, barley, oats, potatoes, and pulse are common throughout the Dominion, while tobacco and maize grow in the warmer parts of the province of Quebec, the vine in the south of the province of Ontario, and apples are an important product in Nova Scotia.

2 Animal.—The animal products may be classed as follows —

(a) Products of wild animals, as furs from forest animals and from seals, and oil from the seal.

(b) Products of domestic animals—viz. cattle, dead meat, butter, &c. Cheese is an increasingly valuable product.

(c) Products of the fisheries, both in salt and fresh water.

The chief fishing grounds are in the Gulf of St. Lawrence and on the famous Banks of Newfoundland, where the cod is the most valuable both for its flesh and oil. Many other food-fishes—viz. mackerel, herring, and lobsters—are plentiful

The chief fish of the rivers and lakes are the salmon, more particularly in British Columbia, and the white fish of the lakes and rivers of the great plains

The value of the fisheries on the Banks of Newfoundland was discovered in the sixteenth century, and has been the cause of many disputes and treaties

between Great Britain and the United States, as also with France and other European countries

3. Mineral.—Vast stores of mineral wealth exist in Canada, and they are being rapidly developed and worked. The most important products are coal, iron, nickel, gold found in the Klondyke district on the Yukon, Dawson City being the chief mining settlement, and petroleum. Many other minerals exist, and only await development.

MANUFACTURES—Up till the present time the energy of the people of British North America has been mainly directed to the development of its great natural resources. Many mills are engaged in the production of flour, the conversion of lumber into planks and various manufactured articles of wood, and in wood pulping for paper manufacture. Leather is largely made.

TRADE.—A very active trade is carried on—

First, in the exchange of the varied products of the many provinces.

Second, in the exchange of the products of forests, farms, and fisheries for the manufactured goods of the United States and of Europe.

MEANS OF INTERNAL COMMUNICATION—The first trade routes naturally followed the St. Lawrence and its connected lakes and streams. The difficulties caused by the occurrence of falls and cataracts have been obviated by the construction of several canals, of which the Welland Canal between Erie and Ontario is the chief, as it avoids the Niagara River and Falls. Large vessels of light draught, specially constructed, can now pass from the sea to the western end of Lake Superior.

There is also a considerable length of railways, the chief line being the Canadian Pacific, from Halifax to Vancouver.

FOREIGN TRADE.—Imports.—Iron and steel goods, woollen and cotton goods, coal, sugar, and tea. Also numerous articles of luxury and of tropical produce.

Exports.—Timber and animals (chiefly cattle) form about one-sixth of the total value.

Wheat, cheese, gold, and dried fish are also important.

PORTS.—On the Atlantic Coast.—Halifax, in Nova Scotia, has a great advantage over most of the other ports of the Atlantic coast and of the St. Lawrence in being generally free from ice all the year round, and it is, therefore, the winter port

of the Dominion. St. John (New Brunswick) also has a fine harbour and large trade.

On the St. Lawrence—Montreal (466), on an island in the river, is the largest town in the Dominion. Formerly large vessels only reached Quebec, but the river has been deepened, and now ocean-going steamers ascend to Montreal.

Quebec (78) still has a large trade, though a variety of causes has made the city lose its place as chief port.

Lake Ports—Toronto (376) is well situated upon L. Ontario, and is a town of rapidly increasing importance.

Hamilton is also a thriving port upon L. Ontario.

Pacific Ports—Victoria, in Vancouver Island, is the chief port of the province of British Columbia; Vancouver, the western terminus of the Canadian Pacific Railway, is of rising importance.

PROVINCES AND THEIR CAPITALS.—The following fourteen provinces form the Dominion of Canada:—

(1) Quebec, cap. Quebec, at the confluence of the river Charles with the St. Lawrence.

(2) Ontario, cap. Toronto, on Lake Ontario.

(3) Nova Scotia, cap. Halifax, upon an excellent harbour on the Atlantic.

(4) New Brunswick, cap. Fredericton, upon the river St. John.

(5) Prince Edward Island, cap. Charlottetown, upon a good harbour on the west of the island.

(6) Manitoba, cap. Winnipeg, at the junction of the Red and Assiniboine Rivers.

(7) British Columbia, with Vancouver Island, cap. Victoria.

(8) The new provinces of Alberta and Saskatchewan, formed in 1905 out of the districts of Alberta, Saskatchewan, Athabasca, Assiniboia, &c.

(9) The district of Keewatin and the Yukon territory.

Newfoundland is a Crown Colony having no political connection with Canada. With this island is included the coast of Labrador.

1. Province of Quebec.—This province extends along both sides of the St. Lawrence. That district which is on the right bank is the most thickly peopled. A large proportion of the province is still covered with forests, and lumbering is the chief occupation. The chief crop is oats. The main portion of the

province forms part of the plateau of Canada, and, owing to its elevation and to its northern exposure, has very cold winters.

The chief cities are Quebec and Montreal.

Quebec (78), the capital of the province, is built at the foot and on the top of bluffs forming the left bank of the St Lawrence, and thus has a very strong position. Owing to the deepening of the river to Montreal, Quebec has not grown so rapidly in recent years as some other Canadian cities, but it is still the point of departure and arrival for passengers and has a large trade in lumber. Many of the inhabitants are French.

Montreal (466), the largest city in the Dominion, stands on a long island in the St Lawrence, and has great trade.

2 Province of Ontario.—This province is about two-thirds the size of Quebec, but has a larger extent of cultivated land. The district which lies between Lakes Erie, Ontario, and Huron in the southerly portion of the Dominion has a pleasanter climate than Quebec. In addition to wheat, barley, and oats, maize and the vine are cultivated with success. The lumber industry is very important. The most valuable crop is barley, which is exported to the United States.

Toronto (376), upon L Ontario, the capital and largest town of the province, is growing very fast. Ottawa (60), upon the R Ottawa, is the capital of the Dominion, and is the centre of the lumber trade of the province. Hamilton is a lake port upon L Ontario.

3. Nova Scotia, including Cape Breton Island, is extremely well situated for commerce. The natural productions are timber, with coal and other minerals, and the adjoining seas swarm with valuable fish.

Halifax (46), the capital, upon an excellent harbour, is the chief naval port for British ships in American waters, and is the winter port for the Dominion, owing to the freezing of the St Lawrence.

4. New Brunswick, a hilly province, is very similar in productions to Nova Scotia.

Fredericton, upon the R St John, is the capital.

St John, the same size as Halifax, is the largest town.

5. Prince Edward Island is a fertile island, with the densest population in the Dominion.

The capital is Charlottetown.

6. Manitoba is the northern portion of the low-lying plain which extends southward into the United States, and forms the

basin of the Red River of the North. This province has progressed with great rapidity in the last twenty years, owing to the suitability of the rich soil for wheat growing. The construction of the Canadian Pacific Railway and the development of the lake shipping have enabled Manitoban wheat to be carried swiftly and cheaply to Europe.

Winnipeg (100) is the capital and largest town.

7. British Columbia and Vancouver Island are together 400,000 sq. miles in area, but there is on the average only about one inhabitant to 2 sq. miles. Much of the surface of British Columbia consists of the great Western Plateau, which is very dry and barren. The coast ridges receive abundance of rain, and are clothed with splendid forests. Considerable quantities of gold and silver have been obtained, and coal is abundant.

Victoria, the capital, is upon Vancouver Island.

8. The Provinces of Alberta and Saskatchewan include vast areas between Manitoba and the Rocky Mountains, and are being rapidly developed. They contain extensive districts suitable for the habitation of Europeans and the growth of cereals.

POPULATION.—Over 7 millions, or about 2 to a sq. mile.

The People—More than five-sixths of the people are native born of British or French descent. Rather more than one-quarter of the whole population is of French extraction.

Of the European-born inhabitants the majority are from the British Isles. Native Indians number about 110,000.

History—The French were the first Europeans to form settlements along the banks of the R. St. Lawrence and in the provinces on the south of the Gulf. When the Seven Years' War was raging, the whole province of Canada was conquered, and was recognised by the French as British territory in 1763. Great progress was made during the nineteenth century in the settlement of new districts and the formation of provinces. In 1867 all the provinces except Newfoundland were formed into the Dominion of Canada.

Government—A Governor-General represents the British Sovereign, and he is assisted by a Privy Council and two Houses of Parliament. Each province has a Lieutenant-Governor with a Ministry and one or two Houses of Parliament. All the provinces share in the election of the House of Commons of the Dominion.

Newfoundland.—This large island lies across the entrance of the Gulf of St. Lawrence, and is separated from the coast of Labrador by the Strait of Belleisle.

The surface is varied with fertile valleys and barren uplands. The climate is influenced by an icy polar current, and, consequently, the winters are very cold. The summers are delayed by the presence in the adjoining seas of large numbers of icebergs brought down from northern regions; and fogs are common at all seasons. The natural wealth consists of fish (cod, lobsters, &c.) on the famous Banks of Newfoundland, seals on the Labrador coast, copper ore, and iron pyrites and lumber. The soil has been tilled to only a small extent, but the cultivated area is increasing as the fertile spots become better known. The people number about 240,000, of whom the great majority are directly connected with the fisheries.

The exports are the produce of fisheries and mines—viz. cod-fish, cod and seal oil, copper and iron, lobsters, and seal-skins.

The imports are articles of food, as flour, bacon, cheese, &c., from Canada and the United States; manufactured goods, woollens, cottons, and canvas from Great Britain, tropical produce, sugar, coffee, tea, &c, from British Colonies.

The island is a Crown Colony, with a large share of self-government. The Governor, who is appointed by the British Sovereign, is aided in his functions by a Council and two Houses of Parliament.

The capital is St. John's (81).

The Bermudas.—The Bermudas are a group of numerous small islands lying nearly 700 miles to the south-east of New York. On account of their charming climate, these islands are visited by many Americans in winter.

The capital is Hamilton. The islands are a British Colony under a Governor, with a Council and an elected House of Assembly.

EXAMINATION PAPERS

- A. 1 Show how the direction of the chief rivers of British North America is determined
- 2 What provinces in British North America produce wheat, timber, gold, copper, wine, sealskins, and cod?

3. Compare the position, surface, and products of Manitoba with those of New Brunswick
 4. Give an account of the climate of British North America, with reasons as far as possible
- B 1 Give some description of the Mackenzie and Fraser Rivers, showing how these rivers differ from each other, and giving causes
- 2 Describe the water route by which goods may pass from the Atlantic Ocean to the west of Lake Superior, drawing a sketch-map
 - 3 Describe the position of, and say what you can of, Halifax, Vancouver, Winnipeg, Montreal, Hamilton, Toronto, St John's, and Quebec
 - 4 State the nationalities which make up the population of the Dominion, showing causes for the presence of each important element.

THE UNITED STATES

BOUNDARIES AND AREA.—The boundaries of the United States are natural for a considerable distance—the Atlantic Ocean on the east, the Pacific Ocean on the west, the River St. Lawrence and the Great Lakes on the north, and the Gulf of Mexico and the Rio Grande del Norte on the south.

The area is 3 million sq. miles—with Alaska $3\frac{1}{2}$ millions. (Compare with British North America.)

COAST-LINE.—The east coast is much more indented than the west, the only opening on the latter being San Francisco Bay.

On the east are New York Harbour, with New York upon it; Delaware Bay, with Philadelphia, and Chesapeake Bay, with Baltimore

The Mouth of the Mississippi is advancing rapidly out to sea by reason of the great deposit of sediment brought down by the river

The chief island is Long Island, separated from the mainland by Long Island Sound

RELIEF.—Beginning on the Atlantic coast and proceeding westward the surface of the United States consists of —

1 The lowlands of the Atlantic Slope This plain widens from north to south. In the north the land is hilly and not very fertile, in the south it is swampy and fertile

2 The highland region, known as the Appalachian System, which consists of parallel chains with longitudinal valleys.

3. **Broad plains**, which stretch westward to the Mississippi. These include many of the most productive States in the Union. In the northern part are the famous Prairies, which produce great quantities of wheat.

4. **The Great Plains**, which extend for many hundreds of miles to the east of the Rocky Mountains, with a very gradual slope towards the Mississippi Valley. The rainfall over these plains is not abundant, and large areas are sterile.

5. **The Great Plateau**, which occupies most of the western half of the United States. This plateau varies in width. It is 500 miles wide near the Canadian frontier, 1,000 miles in the centre, and 600 miles wide on the Mexican frontier. Several mountain ranges traverse the plateau from north to south.

(a) **The Rocky Mountains**, to the east of the plateau, form the chief ridge. Several peaks are over 14,000 ft. in height.

(b) **The Wasatch Range**, branching off in a south-westerly direction, divides the Great Plateau into the Great Basin and the Colorado Plateau, which differ in physical character.

(c) **The Coast Range** lies near the Pacific, and is of moderate height.

(d) **The Cascade Range** in the north and the **Sierra Nevada** in the south form the western edge of the plateau.

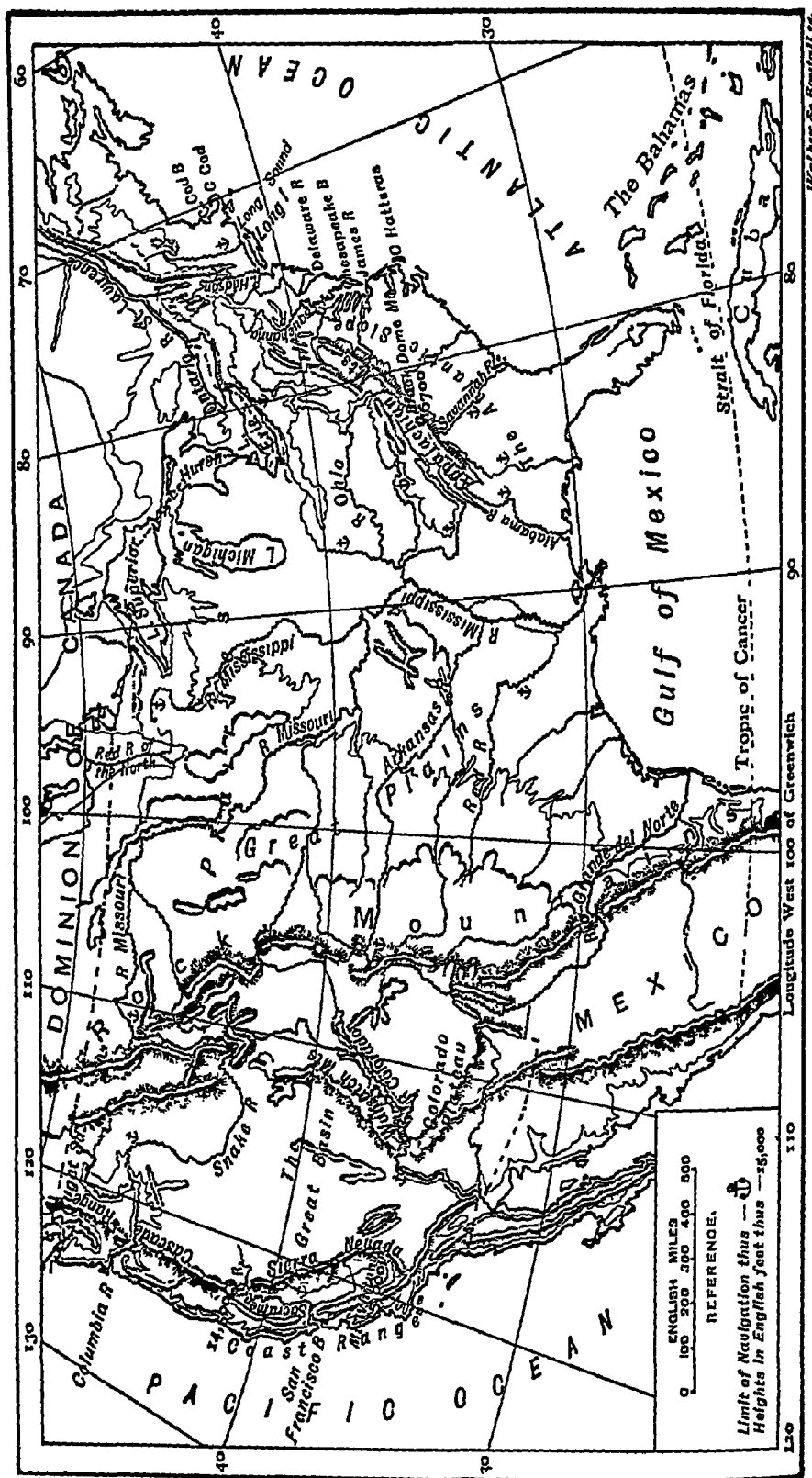
RIVERS.—The United States possess many great and important streams, but all others are dwarfed by comparison with the mighty system of rivers which unite to form the Mississippi. The rivers can be divided into systems which correspond with the slope of the country which they drain.

1 **The St Lawrence System**—The rivers which flow from the United States into the St Lawrence are chiefly useful for the power which they furnish for the working of machinery. Consequently, many lumber, flour and other mills are situated upon their banks.

2 **The Atlantic System**—The most important streams forming this system vary in length from 300 to 500 miles, and are of great importance to agriculture, manufactures, and commerce. Most of them have falls where they leave the high land for the plain, and near these falls many important manufacturing towns have grown. The mouths of the rivers form good harbours.

The **Hudson** (325 miles) is commercially the most important of these rivers, flowing through a valley which is the most convenient trading route towards the West, and having at its mouth the great city of New York, with its many adjoining towns.

Fig 115—THE UNITED STATES: PHYSICAL.



Other important streams are the Delaware, Susquehanna, James, and Savannah

3 The Pacific System —The Colorado is of very little use for irrigation, but is navigable for about 500 miles. The banks of this river are exceedingly steep and high, reaching a height of even 7,000 ft

The Sacramento is of very great importance in the irrigation of the great valley of California

The Columbia drains a mountainous district, and has many falls, which furnish abundant water-power. A great industry on this river is the capture and preparation of salmon for export

4 The Mississippi drains almost the whole of the United States between the Rocky Mountains and the Appalachians, its basin being about one and a quarter million of sq miles. The source of the Mississippi proper is in the numerous lakes upon the plateau of Minnesota, and the length of the Upper Mississippi is about 1,400 miles from the source to its junction with the Missouri. The Missouri drains a region which is almost half the area of the Mississippi Basin, but the rainfall of its basin is small and the river has a less volume at its confluence than at a point nearer to its source. Another great tributary is the Ohio, which is almost as long as the Upper Mississippi, and has a very great volume. Below its union with the Missouri the river receives the Arkansas and Red Rivers on the right bank. The Lower Mississippi flows through a valley which, for a considerable distance on each side, is below the level of the river, and is consequently subject to floods. The total length from the source of the Missouri to the Gulf of Mexico is over 4,000 miles. Into the Gulf of Mexico there also flows the Rio Grande del Norte (Great River of the North), which comes from the Great Plateau and has a course 1,400 miles in length

CLIMATE AND RAINFALL.—Generally speaking, the West Coast States have a more equable climate than those of the East, while the Northern States naturally have colder and longer winters than those in the South. This latter difference is not so great as might be supposed from the fact that the greatest distance from north to south is nearly 2,000 miles.

FERTILITY OF SOIL.—There is a very great extent of fertile soil in the United States, the bulk of it being in the basin of the Mississippi. The Great Plateau, for reasons stated previously, is very barren, and only a very small proportion of its surface is tilled. The States of the Atlantic Slope contain much fertile soil, particularly those south of New York. The great Western plains suffer from scarcity of rain, but they produce nutritious grasses, upon which vast herds of cattle are fed. The prairies of the North generally have a good rainfall, and produce large crops of cereals.

PRODUCTS.—1. Agricultural.—The most valuable crop is maize, which is exceedingly widespread, but is grown most extensively in the Central States. Hay, wheat, oats, and cotton are all of very great value. Wheat is very widely grown, but is the main crop in the Northern States, more particularly those to the west of Lakes Superior and Michigan. Oats are largely grown in the moister regions, where wheat would not flourish so well. Cotton is the chief crop in the States bordering upon the Gulf of Mexico, as well as in the southern half of the Atlantic States. Other important crops are barley, rye, and buckwheat, tobacco, potatoes, and fruits. The most important fruit States are Florida, where the orange is abundant; California, which produces many varieties, especially grapes, apricots, and oranges; and the New England States, where apples are very plentiful.

Forest Products—When the United States were first settled by Europeans, dense forests extended from the Atlantic Ocean across the Appalachian Mountains and westwards towards the Mississippi. A very large area is still covered with forests, but the quantity of timber cut down yearly is enormous, and the planting of trees is now widely carried on. The most common trees are pines and firs, with various kinds of cedars, hickory, and walnut.

The forests on the Cascade Range are remarkably fine, and the lumber industry has become very important there in recent years.

2. Minerals.—A list of the minerals worked in considerable quantities in the United States includes almost all the important minerals used by man.

Coal, iron, silver, gold, lime, petroleum, building-stone, copper, and lead take first rank, and besides these there are many others.

Speaking generally, it may be stated that the precious metals are worked to the west of the Mississippi, and the other minerals to the east of that river.

Thus, gold, silver, and quicksilver are found in the mountains of the Great Plateau, especially in the States of California and Nevada.

Coal, iron, lime, petroleum, &c., abound in the northern section of the eastern half of the United States. Alabama and Georgia, further to the south, have valuable coal and iron deposits.

The Alleghany coalfield is of great extent, stretching from the State of Pennsylvania to Alabama.

The States in which mineral oil abounds are also rich in natural gas, which issues from the soil, and is largely used for heating and lighting.

Vast quantities of coal are now annually saved in the States of Pennsylvania, Ohio, and Indiana by the use of this gas

Copper exists in great quantities near Lake Superior, especially in the peninsula between that lake and Michigan

In Pennsylvania, the chief iron-producing State, the iron ore has largely to be brought from a distance, but in Alabama the town of Birmingham lies in a district where coal, iron ore, and lime abound together, and hence a great iron industry has sprung up

3. Animal Products.—In the United States the produce of wild animals has diminished with the development of the country, and the only important products are the furs and oil of the seals which are hunted on the coast and islands of Alaska.

From domestic animals—viz. cattle, sheep, and swine—the produce is exceedingly valuable, furnishing not only abundance for home consumption, but large quantities for export. Thus, meat, especially fresh and cooked beef, live cattle, lard, bacon, hides, &c, are exported to European markets.

4. Fisheries.—The adjoining seas, as well as the lakes and rivers, abound with valuable food-fishes, and their capture and preparation employ large numbers of persons.

MANUFACTURES.—The earliest manufacturing industries in the United States were those connected with the preparation of natural produce for home and foreign markets, as lumber, flour, meat, and fruit. Lumber-mills for the sawing and manufacture of timber are numerous in the forest regions, especially where water-power is handy. Flour-milling is extensively carried on at Minneapolis and St Louis, on the Mississippi, and at other places to which the grain can be conveniently carried.

Meat curing and packing is a very important industry at Chicago and Cincinnati. Fruit-canning is very largely carried on at San Francisco.

Other important manufactures are iron and steel, textile fabrics—viz cotton and woollen clothing—leather and leather goods

Iron and steel are wrought and manufactured into all kinds of machinery, rails, tools, &c., at many places, but chiefly at Pittsburg and Birmingham

The textile manufactures, clothing, and leather are mostly carried on in the North-eastern States—i.e. those to the north of Philadelphia

TRADE.—Owing to the great variety and amount of the products of the forests, farms, mines, and waters, there is a large surplus for export, and there is also a large demand for manufactured goods from Europe and for tropical produce. The home demand grows so fast that the exports do not increase so rapidly as the imports. The growth of manufactures in the United States causes a greater consumption of raw materials, and tends to make the country more self-supporting.

MEANS OF INTERNAL COMMUNICATION.—The railway system is remarkably extensive, a network of lines running from Atlantic to Pacific. The railways crossing the Rockies and the Great Plateau are all marvels of engineering skill. By rivers and lakes many thousands of navigable waterways are available, though these suffer in all the Northern States from frost in winter, and in the hotter and drier States from drought in summer. A very great number of steamers and other vessels are engaged in this traffic.

FOREIGN TRADE.—Imports.—Sugar, coffee, and molasses, chemicals, woollen goods, and silk manufactures are the most important, but, besides these, there is a great variety of raw materials for manufactures, as raw silk, hides and skins, flax and jute, and india-rubber; also manufactured tinplates for canning meat, fruits, &c., tea, and tropical produce.

Exports.—Raw cotton (nearly one-third of the total value), breadstuffs, provisions, beef, bacon and hams, butter, cheese and lard, mineral oils, animals (cattle chiefly), manufactured iron and steel (particularly machinery), wood and its manufactures, and tobacco.

The foreign trade is mostly with the United Kingdom, Germany, British North America, the Netherlands, and France. The United Kingdom takes almost one-half of the exports, and sends about one-fifth of the imports.

SEAPORTS—The following six towns are the most important seaports:—New York, Boston, Philadelphia, Baltimore, New Orleans, and San Francisco.

Of these, New York carries on just over one-half of the total foreign commerce.

The four first-named export and import a great variety of produce and manufactured goods.

New Orleans chiefly exports cotton. San Francisco exports wheat and canned goods, and imports British and other manufactured goods.

Pilgrim Fathers landed, and within a short distance he several manufacturing towns

Baltimore (558), upon an arm of Chesapeake Bay, is an important seaport

Buffalo (423), upon Lake Erie, is a very important port, where produce conveyed down the great lakes is transhipped for New York and conveyed by the Erie Canal and Hudson River

Washington (331), in the District of Columbia, is the capital of the United States

(b) In the Central States.—These States form the chief part of the great Mississippi Basin, and in them is produced the bulk of the cotton, corn, wheat, and meat raised in the country, as well as numerous other products, both vegetable and mineral. Enormous quantities of produce are collected at favourable points, as Chicago, St Paul, St Louis, and Kansas City, and conveyed either by rail to the Atlantic ports or by the Mississippi to New Orleans

Chicago (2,185), upon the south-west of Lake Michigan, is a great lake-port and a centre from which railways diverge in all directions Its excellent situation for the collection of produce from the western prairies has caused this city to grow at an exceedingly rapid rate Great quantities of canned meat are sent to all parts of the world

St Louis (687), upon the Mississippi, near its confluence with the Missouri, resembles Chicago in the nature of its industries and commerce, as does also Cincinnati (364), on the Ohio Cleveland and Pittsburg have already been referred to as iron and steel manufacturing towns

New Orleans (339), near the mouth of the Mississippi, since the deepening of the chief mouth, is reached by large vessels at any time, and has great commerce The produce of the Mississippi Valley is conveyed in steamers and barges down the river and there transhipped The city suffers in health from being below the level of the river

Minneapolis (301) and St Paul (214), in Minnesota, are situated close together upon the Mississippi, the former having a great many flour-mills and the latter being a commercial centre

San Francisco (417) is situated upon an excellent harbour and has a very equable climate This city has railway or steamboat communication with all parts of the Western States, and is the chief port for the export of the wheat, fish, fruits, &c, there produced A large trade with Europe is carried on by sailing vessels round Cape Horn There are numerous manufacturing industries The city has many Chinese inhabitants

Denver (213) is the largest and the chief of the many towns that have arisen on account of the mining industries in the Rocky Mountains

Salt Lake City (92), the capital of Utah, is surrounded by a district which has been rendered very fertile by irrigation, through the industry of the Mormons

POPULATION—In the year 1910 the population was 92 millions, or 29 6 to a square mile.

The people are mainly of British extraction, but many European nations are represented, the next in number being Germans and Norse Coloured people, descended from the Negro slaves, number 10 millions, and there are about 260,000 Indians and over 140,000 Chinese Chinese are no longer admitted to the States.

GOVERNMENT—The States form a Federal Republic Each State has its own Governor and Legislature, and may make laws affecting its own inhabitants only At the head of the United States Government is the President, who is elected by the people He is aided in his functions by a Congress of two Houses, chosen by the States according to their population.

Alaska, having an area of over half a million square miles, is a mountainous territory, watered by the Yukon. This country has a climate remarkably milder than eastern districts in the same latitude. The chief products are furs, fish, and timber. The chief town is Sitka, with rather over 2,000 inhabitants.

FOREIGN POSSESSIONS—Porto Rico in the W Indies The Philippines, Ladrones, and one of the Caroline Group in the Eastern Archipelago, taken from Spain in 1898 Hawaii also annexed in 1898 Tutuila and other Samoan Islands St Croix, St Thomas, and St John in the West Indies

EXAMINATION PAPERS

- A. 1 Describe from east to west the nature of the surface of the United States, naming the mountains, plains, and plateaux
- 2 Describe the coast from Cape Cod to the mouth of the Mississippi, naming the chief physical features
- 3 Draw a sketch-map of the Mississippi, inserting the chief tributaries and towns, and indicating clearly the watersheds
- 4 What articles of commerce are dealt with at the following ports — New York, Chicago, San Francisco, and New Orleans?
- B 1 Describe the Rocky Mountains, showing position, direction, height, and naming any connected ranges, together with highest peaks
- 2 Show how the climate of the United States affects the vegetable products, and indicate the districts in which the most important crops are chiefly grown
- 3 Name some of the chief imports and exports of the United States
- 4 Give some account of Boston, Washington, Brooklyn, Buffalo, St Louis, and Kansas City

- C 1 Name the chief mineral products and the States in which they are worked
- 2 What are the political divisions of the United States, and how are they governed?
- 3 Name the races most numerous in the United States, and show how they are distributed, also account for the presence of each
- 4 What do you know of the position and nature of the Sierra Nevada, Colorado River, The Prairies, Long Island, and Hudson River?

MEXICO

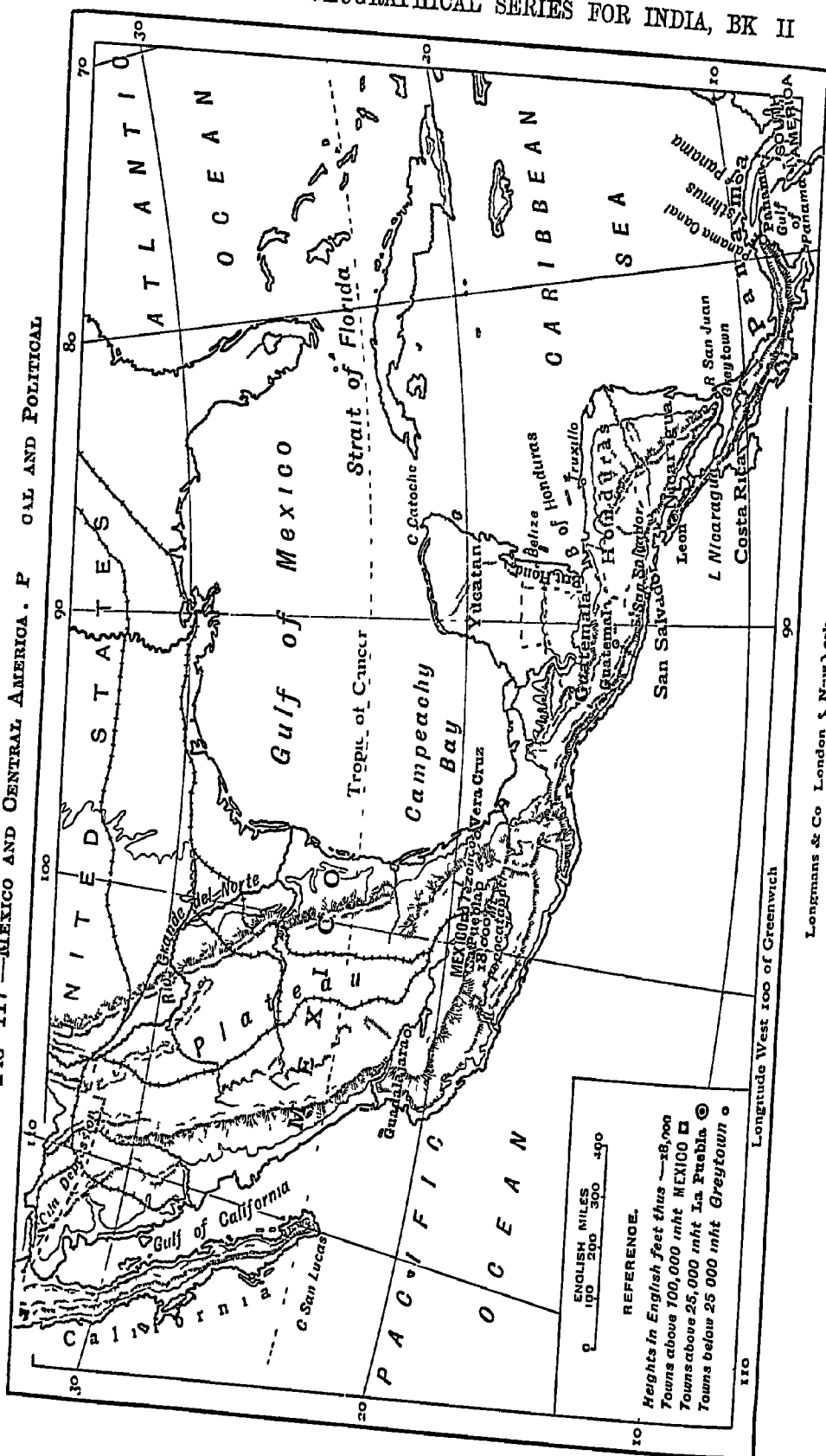
Long before intercourse sprang up between Europe and America, Mexico reached an advanced stage of civilisation under a race known as the **Aztecs**, now practically extinct. The ruins of large buildings still to be seen in many parts of the country tell of their former greatness. Early in the sixteenth century the Aztecs were defeated by the Spaniards, who invaded the country for the sake of its great mineral wealth. Spanish rule continued for three hundred years, but in 1821 Mexico was declared a republic.

POSITION AND AREA.—Mexico occupies the southern end of North America. It is divided from the United States on the north by the River Rio Grande and a line passing along the Gila Depression. On the south the political boundary is in Central America, the peninsula of Yucatan belonging to Mexico. The area is 767,000 sq. miles, or about half the size of India without Burma.

COAST-LINE—On the west the coast is rocky, the shore water is deep, and the harbours are good. The peninsula of California, terminating in Cape San Lucas, is separated from the mainland by the Gulf of California, which is a submerged continuation of the valley between the coast ranges and the Rocky Mountains of the United States. On the east the shores of the Gulf of Mexico are low and bordered by islands and lagoons. The peninsula of Yucatan terminates in Cape Catoche.

RELIEF.—The interior consists of a plateau between two mountain ranges which converge to the south, resembling the Deccan. The western range is the higher, and is called Sierra Madre. The highest peaks are Popocatepetl (18,000 ft.) and Orizaba (17,700 ft.) The coast plain round Campeachy Bay

FIG 117—MEXICO AND CENTRAL AMERICA. POLITICAL AND PHYSICAL



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widens to the south until it extends over the whole of the peninsula of Yucatan.

DRAINAGE—The rivers are generally short, and of little use in navigation, owing to the falls which occur where they leave the plateau on their way to the sea. The most important lake is Tezcuco, on the western shore of which stands the city of Mexico.

CLIMATE AND RAINFALL.—The Tropic of Cancer passes through the centre of the country, it lies therefore in the same latitude as India, but the proximity of the sea and the elevation of the interior are the factors which determine the climate. Along the coast the climate is tropical, but in the interior it varies with the altitude. The ranges which border the plateau deprive the winds of their moisture, and the country lies in the northern belt of calms, these facts account for a deficient rainfall except along the coast.

VEGETATION follows the climate and varies with the elevation. On the shores of the Gulf of Mexico, maize, rice, sugar, hemp, tobacco, and other tropical plants are grown. Higher up, where water is available, more temperate crops such as wheat, barley, and fruits are grown. In the drier parts, the cactus is almost the only plant, but this provides a useful fibre. The forests produce valuable hard and dye woods such as mahogany and logwood.

ANIMALS.—A large area on the plateau is devoted to the rearing of domestic animals—horses, cattle, sheep, and goats.

MINERALS—Mexico is very rich in minerals. The chief product is silver, of which large quantities have been obtained for centuries. Mexico stands first in the world in the production of silver, and second in copper. Other important metals are gold and lead.

MANUFACTURES.—Cotton goods are now produced in increasing amount.

TRADE.—Since the construction of the railways from the coast to the plateau in recent years, Mexico has carried on an active trade with the United States, the United Kingdom, and other countries. The Mexican railways are remarkable for their great elevation and steep slopes.

Imports.—Manufactured goods, chiefly cotton, linen, and woollens, iron goods and machinery, and leather.

Exports.—Silver, hemp, coffee, lead, hides, wood, and tobacco are the most valuable

SEAPORTS.—Vera Cruz (24), upon the Bay of Campeachy, is the chief port, and is the outlet for the most thickly peopled part of Mexico.

TOWNS—Mexico (344), upon Lake Tezcuco, is the capital and by far the largest city. It is an old city, having been founded by the Aztecs, who inhabited the country previous to its conquest by the Spaniards. Guadalajara has 101,000 and Puebla has 93,000 inhabitants.

POPULATION—Fifteen millions, or 17 to a square mile.

The population is unevenly distributed, very large districts in the north having but few people.

PEOPLE—About one-fifth are whites of Spanish origin and the remainder either of pure Indian or mixed race. All have equal privileges in political matters.

GOVERNMENT—As in the United States, the various States of Mexico form a Federal Republic. Each State controls its local affairs, whilst national concerns are controlled by a Congress of two Houses, with a President elected for four years.

CENTRAL AMERICA

The geographical region of Central America lies between the isthmus of Tehuantepec and the Isthmus of Panama, that is, between the parallels of 10° and 20° N. As regards position it belongs rather to North than to South America, but geologically it forms a region to itself, the volcanic highlands of the interior being of more recent formation than the main ranges of the continents which it now connects.

SHAPE AND COAST-LINE.—In shape Central America may be compared to North America on a small scale—wide in the north, where Yucatan divides the great inland sea into two parts, the Gulf of Mexico and the Caribbean Sea, and tapering to the south. The east coast is more irregular than the west, but both have a number of indentations, so that Central America, like North America, has a long coast-line relatively to area. The east coast is generally low, with narrow, shallow, and difficult harbours, the west is rocky with open and deep harbours.

RELIEF.—The interior is mountainous. The main ridge

which attains a height of 14,000 feet, is of volcanic origin, and is nearer the west than the east coast. From this chain spurs run out to the east, the highlands ending in a low plateau in Yucatan, and sloping down to marshy coast plains in Honduras and Nicaragua. The rivers are generally short and rapid, with falls where they leave the plateau, but the abundant rainfall gives them a regular supply of water. The chief river is San Juan, which drains Lake Nicaragua.

THE PANAMA CANAL.—The great length of America without water communication between the Atlantic and Pacific Oceans has proved a bar to the commercial advancement of the west coast of the two continents, just as the length of the Old World continents prevented the commercial development of the Far East before the opening of the Suez Canal. For this reason, the construction of a canal through Central America was long contemplated. The San Juan River and Lake Nicaragua provide a natural waterway to within thirteen miles of the Pacific coast, but the volcanic nature of the country to be traversed caused the consideration of this route to be given up. The Isthmus of Panama is the narrowest and lowest part of Central America, and here a canal has been constructed. The difficulty of the undertaking consisted in excavating the hilly core of the isthmus, where the banks of the canal are from 200 to 300 ft high for a distance of seven miles. The canal brings the ports of Western America very much nearer the Atlantic ports and Europe.

CLIMATE.—The prevailing winds are the moist trade-winds which give heavy rain during the summer months when the sun is north of the Equator. The seasons are very similar to those of India, wet and dry periods recurring with great regularity. The rainfall and the temperature decrease from the sea towards the interior. On the coast plains the climate is hot and humid, like that of Madras or Bombay; it is temperate on the outer hills, and cold on the mountains.

VEGETATION.—The tropical heat and heavy rainfall cause a luxuriant vegetation, which varies in type according to elevation. On the eastern lowlands the chief cultivated plant is cacao, but many tropical crops, such as rice, sugar, maize, tobacco and cotton are also extensively grown. The plantain flourishes, and the forests produce mahogany and other fancy woods, and india-

rubber. In the low hills coffee is the characteristic plant, the conditions being similar to those in Coorg. The highest cultivated lands produce wheat, barley and other grains. On the plateau pasture is abundant, and large numbers of animals are reared and exported.

MINERALS—These are at present undeveloped, but gold and silver are the most extensively worked.

POLITICAL DIVISIONS—In addition to a portion of Mexico, Central America contains the six Republics of Nicaragua, Guatemala, Honduras, Costa Rica, San Salvador and Panama, and the British possession of British Honduras. These vary greatly in size. The first three are between 40,000 and 50,000 square miles in area, Costa Rica is 23,000 square miles.

POPULATION—The total population is nearly 5 millions.

This is very unevenly distributed, for San Salvador has a total of over a million and an average of over 110 per square mile, while the average of Nicaragua and Honduras is only about 8 per square mile.

COMMERCE.—The Imports are mostly manufactured goods from the United States, the United Kingdom, Germany, and France, and of exports coffee is the most valuable, bananas, silver, and cattle being next in importance.

SEAPORTS.—There are many small ports upon the Atlantic coast, but they nearly all suffer from sand-banks, obstructing the passage of vessels. The chief are Truxillo, Greytown, and Panama.

TOWNS—Guatemala (90) is the largest town in the Central American States and is the capital of the Republic of the same name.

Leon (63), the old capital of Nicaragua, like San Salvador, has suffered much from earthquakes.

The whole of Central America and a large part of Mexico are very subject to disturbances of the earth's crust, often with disastrous results.

British Honduras is a British Crown Colony on the west side of the Bay of Honduras, and consists of a coast-strip with an area of 8,598 sq. miles. It is very unhealthy for Europeans, but is very valuable on account of the forests of mahogany and dyewoods, which are the chief wealth of the colony, and are largely exported.

The chief town, Belize, is the only port with a good harbour on a long stretch of coast-line.

THE WEST INDIES

GENERAL DESCRIPTION.—The term West Indies comprises the very numerous islands which lie in the North Atlantic Ocean between North and South America. They vary in size from mere rocks and islets to the island of Cuba, which is nearly twice as large as Ceylon.

Most of these islands have been formed by volcanic action, and are mountainous, but the Bahamas, a very extensive group, are of coral formation.

Their fertility and beauty have caused the West Indies to be much desired by European Powers, and, consequently, with the exception of Hayti, Cuba, and Porto Rico, most of the islands are European Possessions.

The name 'West Indies' was applied by Christopher Columbus, under the impression that he had reached the islands to the south-east of India.

CLIMATE.—Tropical, but tempered by cooling sea-breezes. There are two seasons, wet and dry. The rainfall in the wet season is frequent and very abundant, with severe thunderstorms.

PRODUCTIONS—The wealth of the West Indies is almost entirely vegetable. Minerals are but little worked, and animal food is largely imported.

Vegetable.—Almost every tropical crop is produced, either for home consumption or for export. The most valuable are sugar, tobacco, cacao, coffee, spices, and fruits, such as pine-apples, limes, bananas, oranges, and coco-nuts. Yams and other roots are largely grown and consumed by the Negroes.

DIVISIONS—(a) The Greater Antilles, consisting of Cuba, Jamaica, Hayti, and Porto Rico.

(b) The Lesser Antilles, consisting of the Leeward and Windward groups.

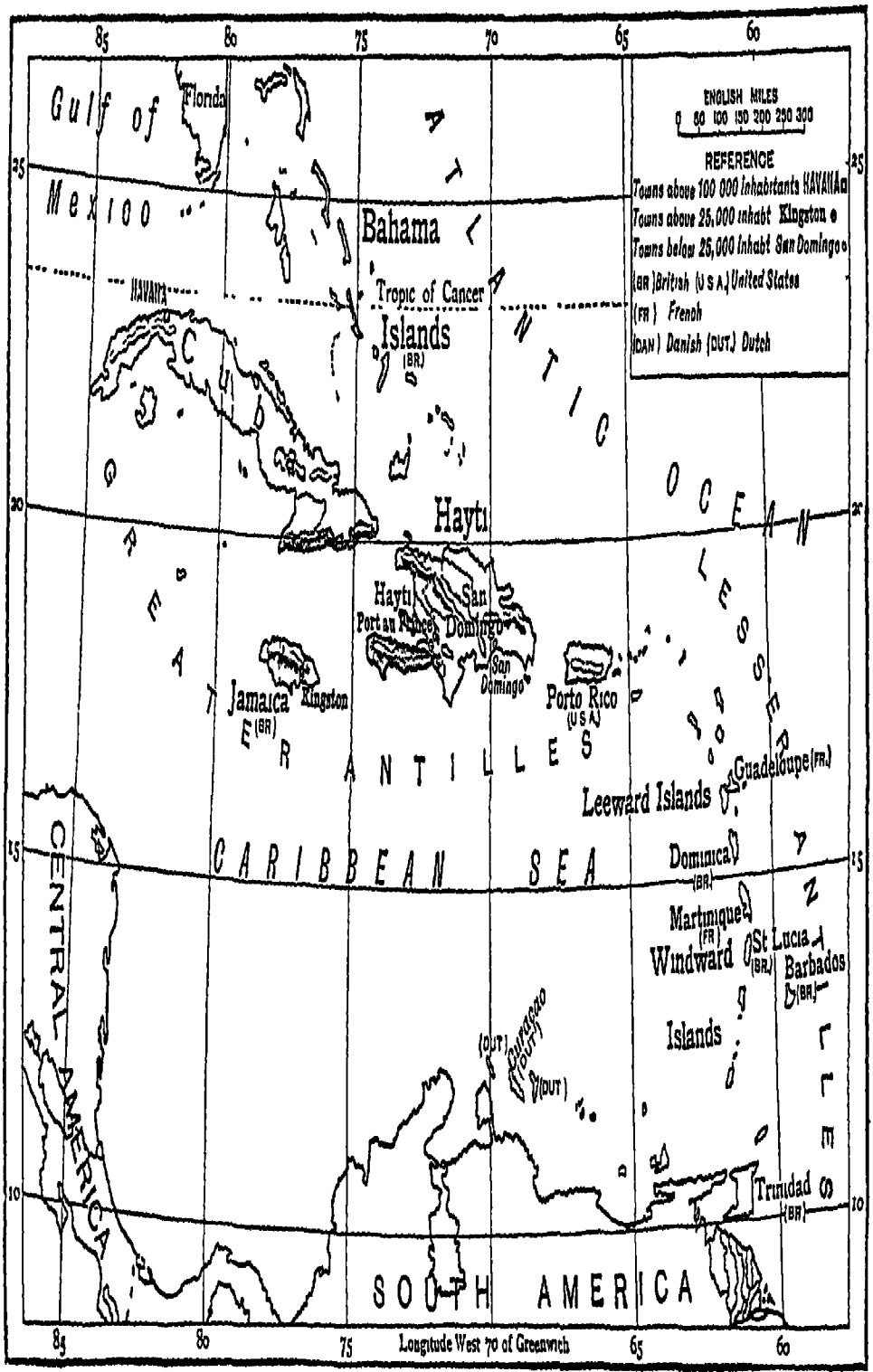
(c) The Bahamas.

HOW OWNED.—Hayti is divided into two important republics. The remaining islands (except Cuba, which is now independent) are colonies of the following nations—1. The United States 2 Great Britain 3 France. 4. Holland.

The United States own Porto Rico and three small islands.

FIG 118—THE WEST INDIES

418 LONGMANS' GEOGRAPHICAL SERIES FOR INDIA, BK II



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Great Britain owns Jamaica, the Bahamas, and more than a dozen other important islands, of which Trinidad, Dominica, Barbados, and St. Lucia are the largest.

France owns Guadeloupe and Martinique and some smaller islands.

The chief Dutch island is Curaçao.

COMMERCE.—The imports are manufactured goods and various food substances, such as meat, salt fish, rice, and flour, and the exports are the products of the plantations, especially sugar, with rum and molasses, coffee, tobacco, and fruits.

TOWNS—Havana (324), the capital of Cuba, is the largest town in the West Indies, and is an important seaport. It has a large Spanish population, and is chiefly famous for the manufacture of cigars.

Port-au-Prince and San Domingo, in Hayti; the former the capital of Hayti Republic, the latter of San Domingo.

Kingston (57), the capital of Jamaica, possesses a good harbour.

POPULATION.—The population is about five millions, and the people consist of various Europeans, Negroes and half-castes, and Asiatic coolies who are imported to work on the plantations. The Negroes form the great bulk of the population.

EXAMINATION PAPERS

- A 1 Describe the surface of Mexico and show the effect of the relief upon the climate
- 2 Name the States of Central America, and say what you can of their people and government
- 3 Name the animal, vegetable, and mineral products of Mexico, and indicate the localities in which they are most abundant
- 4 Draw a map of Central America, and show the position of each of the States and also of Yucatan, Lake Nicaragua, Popocatepetl, Vera Cruz, and Truxillo
- B. 1 State the divisions, natural and political, and the position of the West Indies
- 2 Give some account of British Honduras, stating its position, size, products, climate, and chief town
- 3 Mention any circumstances that have contributed to the growth of Mexican commerce, name the principal exports, and the countries with which the foreign trade is chiefly carried on
- 4 Compare and contrast the West with the East Indies in as many respects as you can

SOUTH AMERICA

GENERAL DESCRIPTION.—In shape and configuration South America bears a remarkable resemblance to North America (see page 375), but in position and climate it bears a general similarity to the continent of Africa. The latter continent extends over 72 degrees of latitude; South America extends over about 67 degrees from about $12\frac{1}{2}^{\circ}$ N lat. to 54° S. lat. In South America, the Equator lies to the north of the line of greatest breadth, in Africa it lies to the south of it. The great protuberance to the east of South America lies almost exactly opposite the great indentation to the west of Africa. Both continents have a very regular outline, the proportion of coast-line to area in each case being very small. Considering the fertility of the soil over the greater part of the area, the population of South America is small, being under 40 millions or less than 6 to the square mile.

BOUNDARIES.—With the exception of the narrow isthmus of Panama, South America is entirely bounded by the sea—the Pacific Ocean on the west, and the Caribbean Sea and Atlantic Ocean on the north and east. Its area is seven million square miles.

COAST-LINE.—Although the coast-line of South America is, on the whole, remarkably regular, the east coast differs from the west. To within a few miles of the southern extremity, the west coast shelves down rapidly to a great depth. The ocean bordering the east coast is, on the other hand, comparatively shallow, and sand reefs and salt lagoons fringe the shores at intervals. Nearly all the islands are in the south, and the west coast of Patagonia resembles the coast of Norway with its fjords and innumerable islands.

The Caribbean Sea is the south-eastern half of the great inland sea of America. It is enclosed by the peninsula of Yucatan and the chain of the Greater and Lesser Antilles which ends in the island of Trinidad off the mouth of the River Orinoco. The shores here are generally high, the northern termination of the Andes. The Gulf of Darien, and the Gulf of Maracaybo, which is connected by a narrow strait with Lake Maracaybo, are the

only large openings. **Cape Gallinas**, the most northerly point of the continent, projects between them.

From the mouth of the **Orinoco**, with its large delta, to **Cape San Roque**, the shore is mostly low and lined with mangrove swamps. The wide and shallow continental shelf and the sand reefs at the eastern extremity of the continent render navigation difficult in places. The wide estuaries of the **Amazon** and **Tocantins** rivers are passed with the large island of **Marajo** between them. Just south of **Cape San Roque** is **Cape Branco**, the most easterly point. From here to the mouth of the **La Plata** the coast plain is narrow with the high background of the **Eastern Highlands**. **Cape Frio** divides this stretch of coast into two nearly equal portions. The chief ports passed are **Pernambuco**, **Bahia**, and **Rio de Janeiro**, the last-named with perhaps the finest harbour in the world. On opposite sides of the **La Plata** estuary are **Monte Video** and **Buenos Ayres**.

The remainder of the eastern coast is more indented, and much of it has a stony beach. The large openings are **Gulf San Matias** and the **Gulf of St George**. Here again the continental shelf widens, and includes the **Falkland Islands** and the archipelago at the south of the continent. The most southerly point of the mainland is **Cape Froward**.

Terra del Fuego, a large island separated from the mainland by the **Strait of Magellan**, 400 miles long, lies in the path of the storms for which these latitudes are renowned. The navigation of the straits is so difficult that sailors often take the more stormy passage round **Cape Horn**.

The **Fuegians**, or **Canoe Indians**, are a very degraded race, much inferior to the **Patagonians** or **Horse Indians** of the mainland. Their dwellings and boats are very rude, and their food consists of shellfish, sea birds' eggs and fish. They live almost entirely in their boats.

From **Cape Horn** to **Chiloe Island**, the coast is indented with numerous fjord-like openings similar to those on the coast of **Norway**, and is fringed with islands including the **Chonos Archipelago**. The high background of the **Andes** with a very narrow coast plain shelving down steeply into very deep water continues along the whole of the **Pacific border** of the continent. The direction is almost due north past the **Juan Fernandez Is.** as far as the 18th parallel, where a large outcurve commences, which

reaches its westerly point in Cape Pariña, just south of the Gulf of Guayaquil, the only large opening on the whole coast. Six

FIG 119 — SOUTH AMERICA RELIEF



hundred miles to the west, and on the Equator, are the Galapagos Islands, belonging to Ecuador. In the extreme north the Gulf

of Panama fills in the curve of the isthmus between Central and South America

Only one continent—Africa—has a smaller proportion of coastline to area than South America.

RELIEF.—The general slope of the surface is from the high ridge of the Andes in the west towards the east. In the eastern half of Brazil the surface is varied by a succession of ranges connected by upland plains. There is also a highland region in the north running east and west and forming the northern boundary of the Amazon basin

MOUNTAINS.—The Andes form the southern portion of the great chain which traverses America from the Behring Sea to Cape Horn. From the north-western corner of South America, proceeding southward, the range consists—first, of three parallel chains, next of two chains, and lastly of one line of peaks. Between the chains of the Andes lie very high tablelands. Throughout the whole length the western coast-strip is narrow, in places remarkably so. The highest peaks are Aconcagua, 23,000 ft., Sorata and Chimboraço, both over 20,000 ft. Many of the Andes are active volcanoes

The Brazilian Mountains consist of numerous ranges, mostly from north to south, of a height ranging to about 7,000 ft or 8,000 ft

The Northern Mountains are of considerable height, but owing to the dense vegetation clothing their sides, they are difficult to explore, and little is known of them

PLATEAUX.—The tableland of Titicaca is a large tract of very high land bordered by two ranges of the Andes in about the middle of the system

The Campos of Brazil are the uplands which connect the various ranges of mountains of that country, and ascend with increasing elevations from the coast to the inland parts

PLAINS.—The Llanos are the low-lying plains which form the great part of the basin of the Orinoco

The Selvas are the forest plains, which extend for hundreds of miles upon either side of the Amazon

The Pampas are wide grassy tracts, occupying the southern portion of the Argentine Republic.

The **Great Shingle Desert** fills up a large part of Patagonia, and is very barren

RIVERS.—The situation of the great range of the Andes parallel to and very near the west coast causes the drainage of the continent to be towards the Atlantic. All the streams flowing into the Pacific Ocean are short, rapid, and commercially useless.

The physical map on page 480 shows three great drainage areas—those of the Orinoco, the Amazon, and the La Plata. The basins of the Orinoco and the Amazon are separated by the Northern Highlands, and those of the Amazon and La Plata by low spurs of the Brazilian mountains, but the water-parting is in neither case very definite, the Orinoco connecting with the Negro, and the southern tributaries of the Amazon with the Paraguay in the wettest season.

1 The Orinoco has a course of 1,200 miles, and flows through the Llanos, which it fertilises by its annual floods. The main stream is navigable for about 1,000 miles, and ships can pass along several of the mouths of the delta.

2. The Amazon.—This mighty river drains an area nearly half as large again as the Indian Empire. It rises among the highest of the Peruvian Andes, and after flowing for 700 miles through the mountain region, it reaches the plains with a width of half a mile. It receives numerous great tributaries, some of which are as large and drain as extensive an area as the great rivers of India. On the left bank are the Yapura and the Negro, and on the right bank are the Purus and Madeira from the Andes, the Tapajos and the Xingu from the Brazilian Highlands, and the Tocantins, which falls into the western arm of the estuary. The river and its tributaries drain the region of the Selvas, which they periodically inundate. The main stream is navigable for 2,600 miles from its mouth, and with its tributaries it furnishes, like the Mississippi in North America, a splendid means of communication with the interior. The volume of water discharged by the Amazon is larger than that of any other river in the world, and its current of fresh water can be distinguished for a long distance from the land. The Amazon is remarkable for its tidal wave which often ascends the river like a wall several feet high. The tide reaches above the junction of the Tapajos with the main stream.

3. The La Plata is formed by the junction of the Parana

with the Uruguay. The Parana rises in Brazil and receives the Paraguay which rises further to the north. Both these streams are joined by several tributaries from the Andes and the Brazilian Mountains before reaching the estuary into which the Uruguay also flows. The total length of this river from the most distant source is 2,800 miles, and both the Parana and Paraguay are navigable for very long distances. These rivers provide a very valuable means of bringing the products of the Central States to the sea. The shallowness of the estuary is a serious drawback, but this is being remedied by dredging and other works. The chief ports are Monte Video and Buenos Ayres on the estuary, and large vessels can reach Rosario on the Parana.

There are several smaller areas of drainage

1. The Magdalena, with its tributary the Cauca, drains the treble chain at the northern end of the Andes.

2. Several streams, the longest of which is the Essequibo, drain the northern slope of the Guiana Highlands.

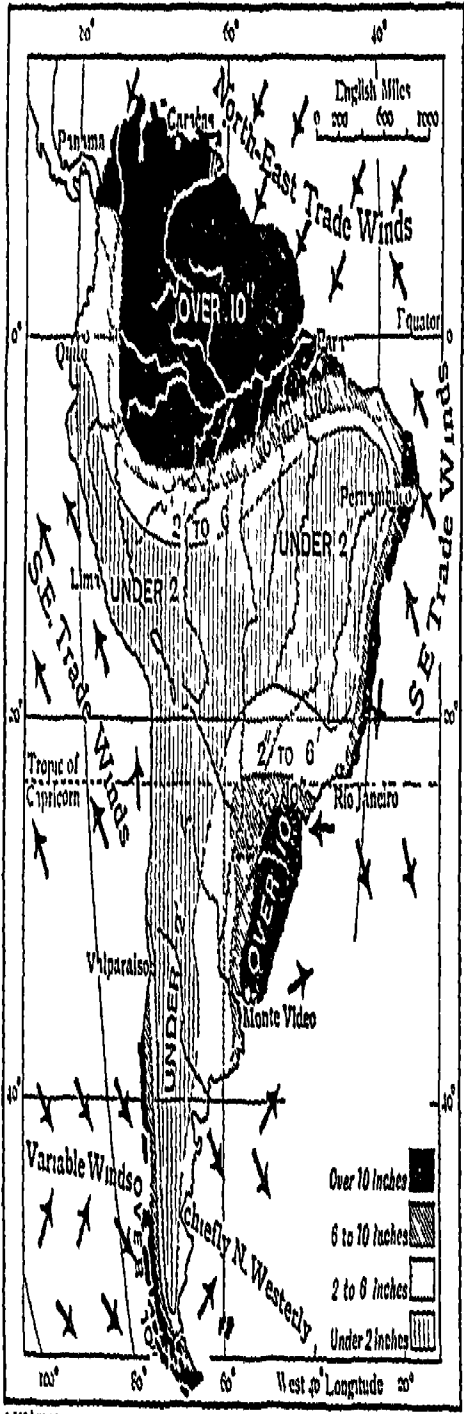
3. The Pardnahyba and the San Francisco flow north-east from the Brazilian Highlands.

4. The south of the continent is drained by several rivers of moderate length, of which the chief are the Colorado and the Negro.

5. The Bolivian Plateau is an area of inland drainage into Lakes Titicaca and Aullagas. These are the only lakes of importance in the continent.

CLIMATE AND RAINFALL.—Three-quarters of the surface of South America lies between the tropics, and has an abundant rainfall and a high temperature at all seasons. In the higher western portion, the climate varies from hot to cool as the ranges are ascended, Quito, at a height of over 9,000 feet on the Equator, enjoys a delightful climate all the year round. North of latitude 30° S the south-east trade-winds prevail, and bring copious rains to the whole of the northern half of the continent except the interior of the Brazilian Highlands, and the eastern slopes of the Andes. These heavy equatorial rains feed the great river systems. South of the Tropic of Capricorn the Brazilian coast receives the heaviest rainfall; a line across the continent from the estuary of the La Plata to the Gulf of Guayaquil separates the rainy area of the east from the drier regions to the west. The dry El Gran Chaco plain, and the Desert of Atacama

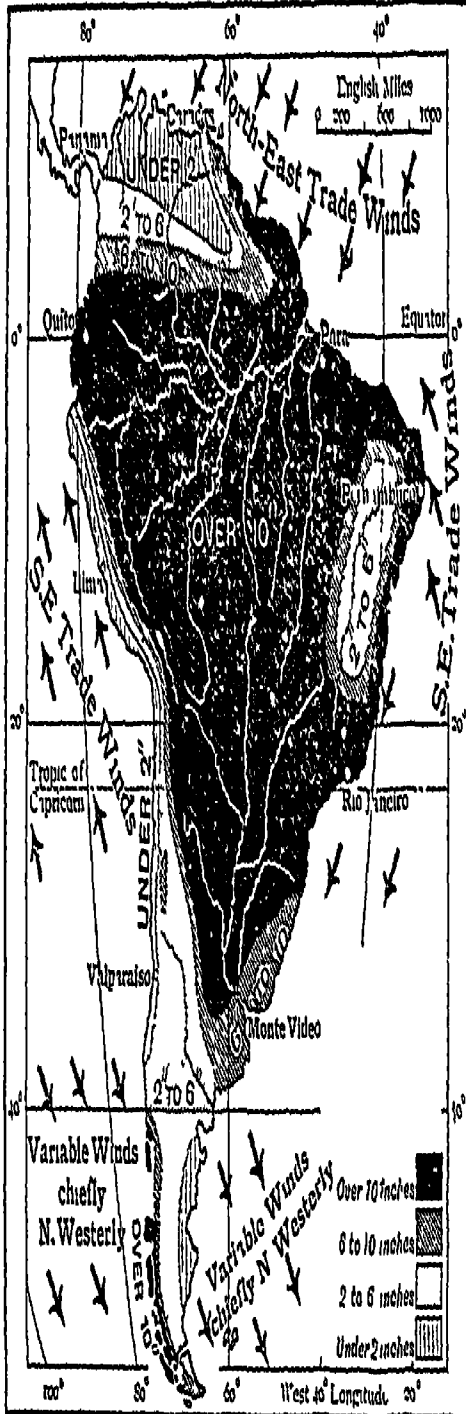
FIG 110a—SOUTH AMERICA RAINFALL JUN TO AUGUST
SUMMER IN NORTHERN HEMISPHERE



after Supan

Emery Walker sc.

FIG 110b—SOUTH AMERICA RAINFALL DEC. TO FEB.
WINTER IN NORTHERN HEMISPHERE



after Supan

Emery Walker sc.

FIG 119d - SOUTH AMERICA JULY ISOTHERMS

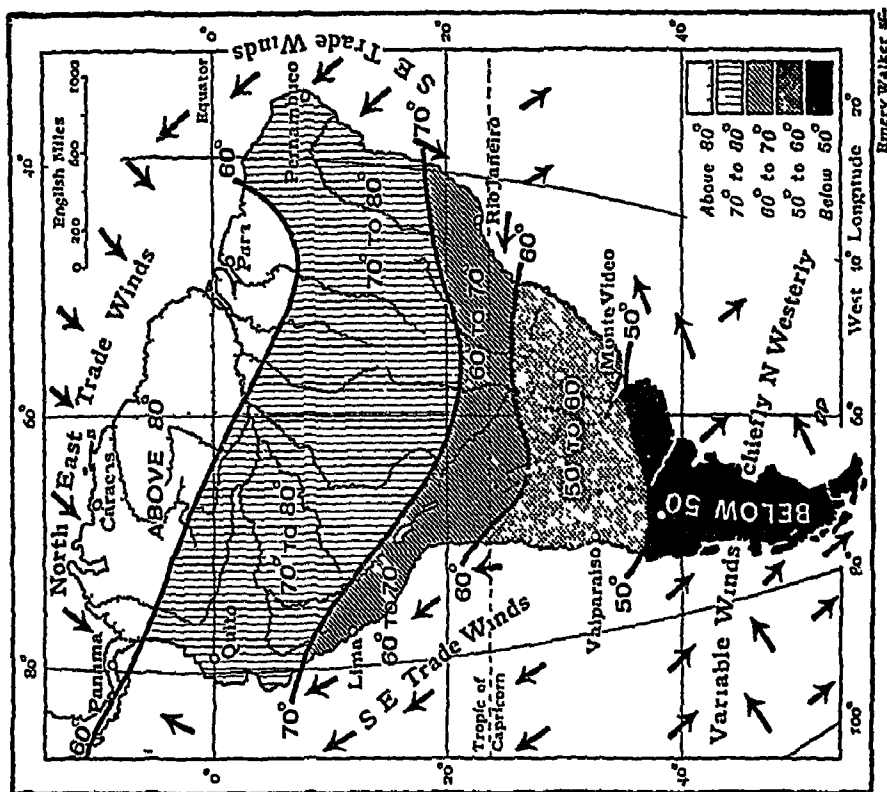


FIG 119c - SOUTH AMERICA JANUARY ISOTHERMS

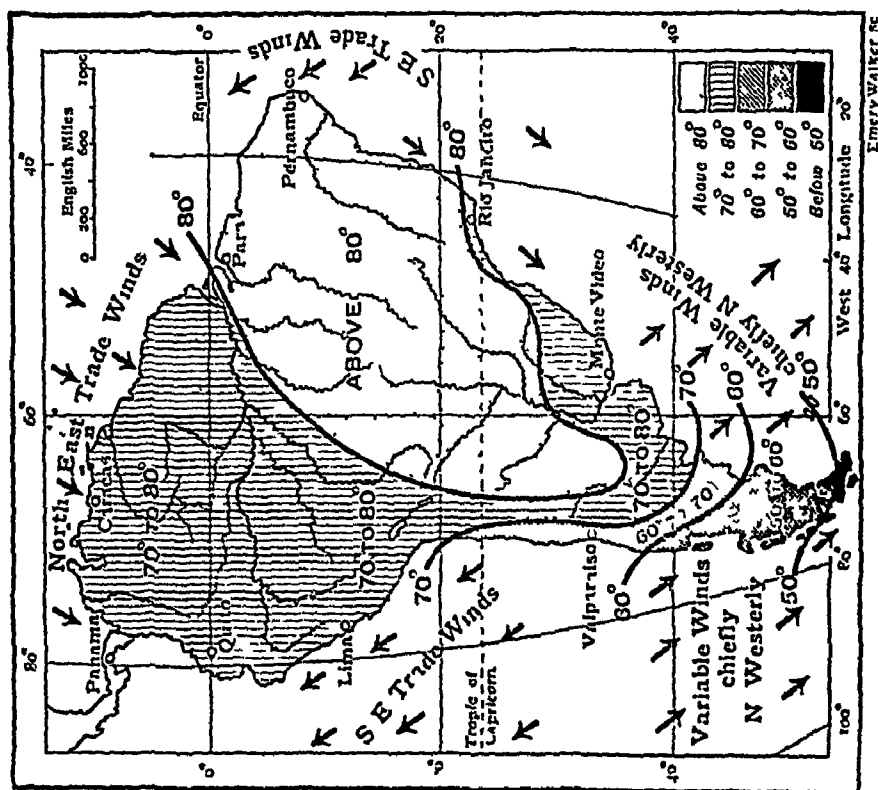
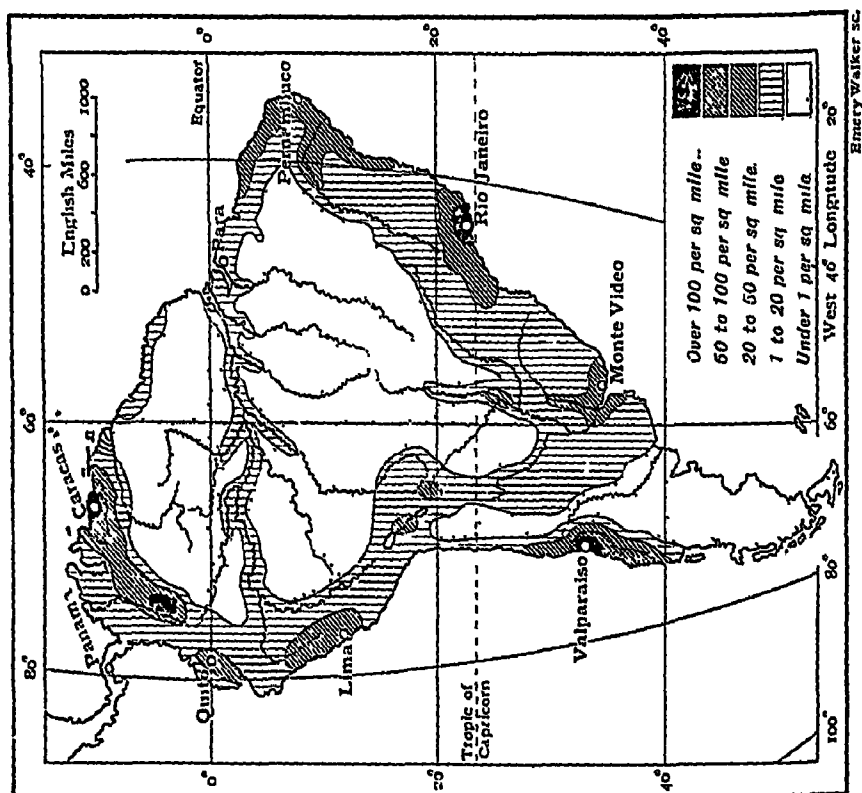
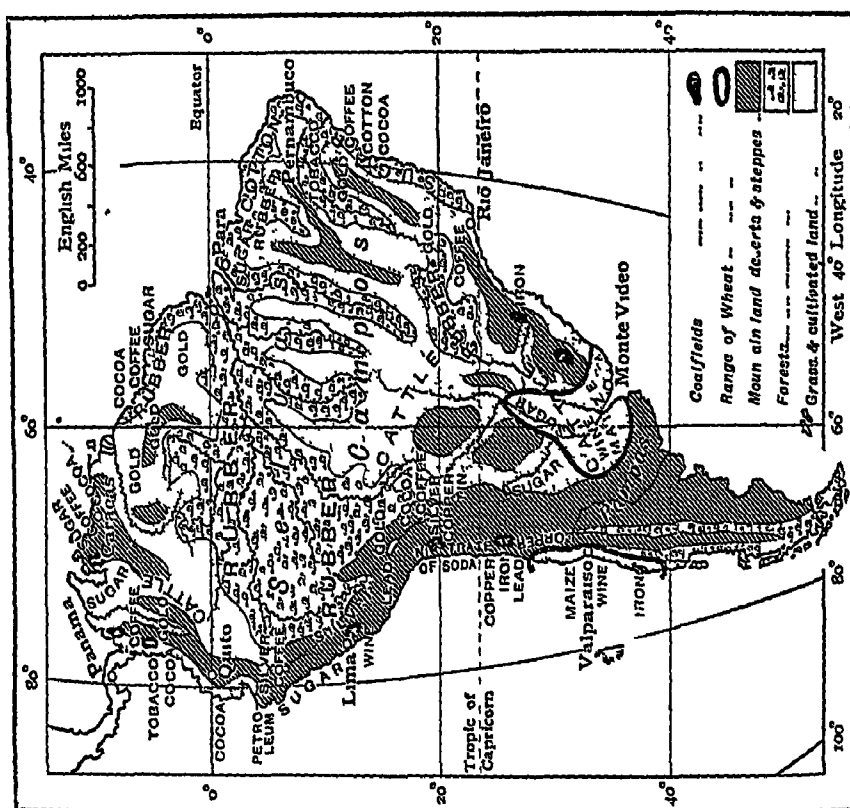


FIG. 119c—SOUTH AMERICA DENSITY OF POPULATION



Emery Walker sc

FIG. 119f—SOUTH AMERICA PRODUCTS



Emery Walker sc

are on the Tropic of Capricorn (Compare the position of the Kalahari Desert, and the Great Sandy Desert of Australia)

South of latitude 30° S the prevailing winds are the 'brave west winds,' and the western side of the Andes receives the rain, while the eastern plains, the Pampas and the Steppes, and Shingle Desert of Patagonia, are dry

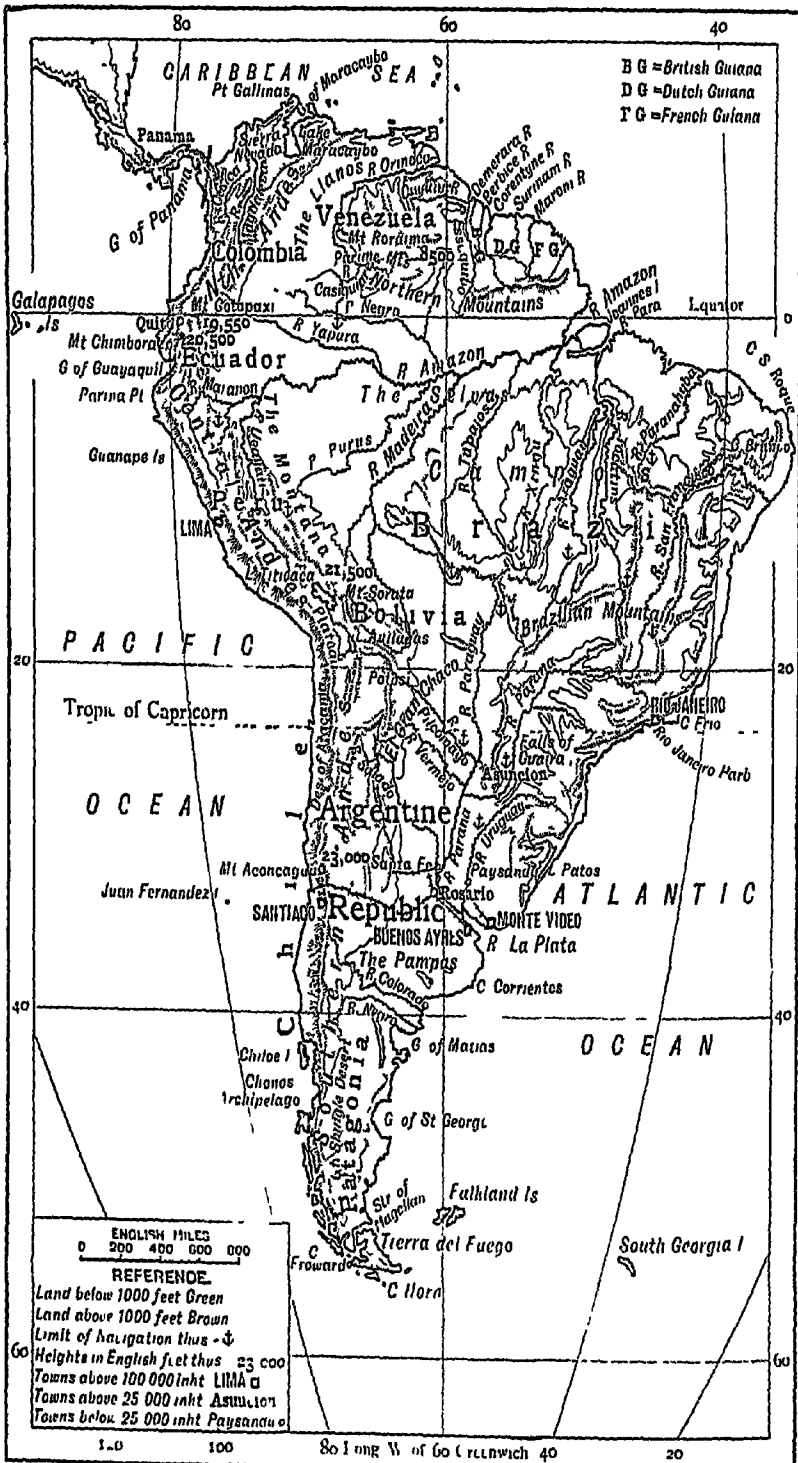
It should be noticed that the climate of South America is in many respects similar to that of Africa, the most striking difference being the absence of a great desert in the north of the former continent. This and other minor differences are chiefly due to—(1) the position of South America, twenty-five degrees further south, (2) the Equator crossing the continent to the north and not to the south of the widest part, and (3) the chief highlands forming a ridge along one side, and not a plateau over the whole of the continent

The difference between the climatic conditions of North and South America is due to the fact that in North America the widest part of the continent is remote from the Equator, some of it within the Arctic Circle—distance from the sea and high latitude accounting for very severe winters; while in South America, the narrowest portion, and most distant from the Equator, is more than ten degrees from the Antarctic Circle, with the result that no part of the coast of South America is ever icebound

VEGETATION.—The vegetation over a great part of South America resembles in its distribution that of Africa. Both continents have a vast central forest area, with a wide belt of open grass land to the north and south

The tropical area of heavy rainfall in South America coincides with the basin of the Amazon, and is called the selvas. This is one great forest, where the trees and vegetation are generally so thick as to be impenetrable, and where animal, bird, and insect life are undisturbed. The forest products are of great value—beautiful cabinet woods, such as mahogany, rosewood, ebony, &c., dyewoods, such as logwood, and rubber. Brazil is the largest rubber-producing country of the world. The cultivated lands of Brazil grow tropical plants, cacao, from which cocoa is made, rice, maize, sugar, and tobacco. Coffee is the most important, half the world's supply comes from Brazil. Fruits, such as oranges and bananas, are plentiful, and the coconut flourishes along the oceanic border

FIG 120 —SOUTH AMERICA PHYSICAL



Walker & Henshall &c.

North and south of the forest area are grassy and cultivated lands. The extensive natural pasture lands are called llanos in the basin of the Orinoco, and pampas in the Argentine. These provide sustenance for large numbers of cattle, sheep, and horses.

The cultivated lands of the north produce tropical plants, cocoa, sugar, maize, coffee, and tobacco. Venezuela grows the finest cocoa in the world, and the chief export from Guiana is sugar and its products.

The summer rains in the Argentine are suited to the success of grain crops, and wheat and maize are exported in increasing quantities, maize is the only indigenous American grain. Paraguay tea or maté is extensively used as a beverage. Tapioca is produced from the root of the manioc or cassava.

The Andes are thickly forested up to the limit of trees, the height of which varies with the latitude. Cinchona is the bark of a tree native to Peru, and the Peruvian Andes are the original home of the potato.

South America is remarkable for the number of its indigenous plants which have been successfully transferred to other parts of the world. The chief are cocoa, tapioca, tobacco, maize, cinchona, and the potato.

Animals.—The native wild animals are very numerous, the variety of species very great, and many of the species are found only in South America. The forest trees are alive with monkeys and birds, such as toucans and macaws, while many large animals range the woods. Snakes of all sizes abound. Many kinds of animals live on the great plains, from the wild horses and cattle, descended from European tame ancestors, to small burrowing animals. The birds, too, range from the large running rhea, something like the ostrich, roaming over the plains, and the condor of the Andes, to the myriads of tiny humming birds which live in the forests. The great mountain ranges have their peculiar animals, as the llama, which is used as a beast of burden in the high western passes. South America possesses no animal so large as the elephant, gnaïe, or rhinoceros, but has some species of the cat-tribe—the jaguar and puma—that are second only to the lion and tiger for size and ferocity.

Horses, cattle and sheep are reared in great numbers on the grassy plains of the north and south, giving rise to a large trade in wool, hides, skins, and meat.

Minerals.—The chief minerals worked are silver in Bolivia, Chile, and Peru, copper in Chile, tin in Bolivia, nitrate of soda in Chile, precious stones in Brazil, emeralds in Colombia. Gold is found in various parts, chiefly in the Andes, and in Venezuela and Brazil.

POPULATION.—It is difficult to estimate the population, because so many of the people live in a savage or half-savage condition, but the total is supposed to be less than 88,000,000.

A very large proportion are Indians and Indian half-breeds. Spaniards and Portuguese are the most numerous of the Europeans, and there are a good many English, Dutch, and French. There are many negroes in Brazil and the Northern States generally.

MEANS OF COMMUNICATION.—Roads are bad in the plains and amongst the mountains. The rivers afford many thousand miles of navigable channels, though many are so shallow that steamers of very light draught propelled by stern wheels are used. Railways are being extended, but there are enormous tracts still remote from any railway system.

THE COUNTRIES IN SOUTH AMERICA, WITH THEIR CAPITALS

<i>Country</i>	<i>Capital</i>
Brazil	Rio de Janeiro
British Guiana	Georgetown
Dutch Guiana (Surinam)	Paramaribo
French Guiana (Cayenne)	Cayenne
Venezuela	Caracas
Colombia	Bogotá
Ecuador	Quito
Peru	Lima
Bolivia	Sucre
Chile	Santiago
Argentine Republic	Buenos Ayres
Uruguay	Monte Video
Paraguay	Asuncion

EXAMINATION PAPERS

- A 1 Name and describe the great plains of South America, stating their position
- 2 Draw a sketch-map of South America, inserting the chief mountain ranges and rivers
- 3 Describe the climate of South America, comparing it, as far as possible, with that of Africa
- 4 Give some account of the wild and domestic animals of South America, showing their distribution, and mentioning any peculiarities

3. 1. Write an account of the mountain systems of South America
2. Describe the La Plata and the streams which unite to form it
3. Describe a voyage from the mouth of the Orinoco to the Galapagos Islands, mentioning the chief capes, openings, islands, and harbours passed on the way, and giving alternative routes round the south of the continent
4. Name the chief vegetable products which enter into the commerce of South America

SOUTH AMERICAN STATES

With the exception of Guiana, the States of South America are independent republics. They may be classified, according to their physical peculiarities, as follows:—

1. **Brazil**—The land of the Selvas and Campos.
2. **Venezuela and Guiana**.—The country of the Llanos and Northern Mountain System.
3. **Ecuador, Colombia, Peru, and Bolivia**.—The Andean States, each including a part of the Montaña.
4. **Chile**.—The Western Coast Strip.
5. **Argentine Republic, Paraguay, and Uruguay**.—The States of the Great Southern Plains.

Guiana is divided into three colonies, owned by Britain, France, and Holland.

The *Montaña* is the region of thickly wooded hills on the eastern side of the Andes.

Each of the above divisions has its own distinctive climate and productions.

POLITICAL FEATURES.—1 **Government**—South America contains ten republics, viz.—all the countries mentioned above except Guiana. Each has a President and two Houses of Legislation.

2. **Religion**.—The Spanish origin of a large section of the population accounts for the prevalence of the Roman Catholic religion.

BRAZIL

POSITION AND SIZE.—Brazil may be said, roughly, to form the Basin of the Amazon, though the upper waters of the Andean tributaries lie beyond the Brazilian frontier, and the streams which form the La Plata have a considerable course in Southern Brazil.

The area is over 3,000,000 sq. miles, or nearly half the continent of South America, and more than three-fourths of the size of Europe.

PHYSICAL FEATURES.—The surface is about equally divided into the Selvas, or low forest plains on both sides of the Amazon, and the Campos, or tablelands of the east and south. The Campos lie between long ranges of hills, which gradually increase in height towards the interior, and the productions are very different from those of the Selvas. The coast-line is very destitute of good harbours for long distances, especially along the north. The harbour of Rio de Janeiro is excellent. In addition to the Amazon the San Francisco, which flows into the east coast, is an important river.

PRODUCTIONS.—The chief cultivated districts are in the low regions round the coast, and on the Campos which are nearest to the sea. The most valuable crops are coffee, much the most important, sugar, tobacco, cotton, and manioc, from the root of which tapioca is obtained.

Of forest products the chief are india-rubber and many varieties of timber.

The minerals of Brazil are valuable, but are little worked. Some gold is obtained.

TRADE—The foreign commerce of Brazil and of all the other South American States is almost entirely limited to an exchange of the products of the fields and plantations, forests and mines, for the manufactured goods of Europe and the United States.

The internal trade of Brazil is small, owing to the difficulties of communication and the simple needs of the tribes inhabiting the interior.

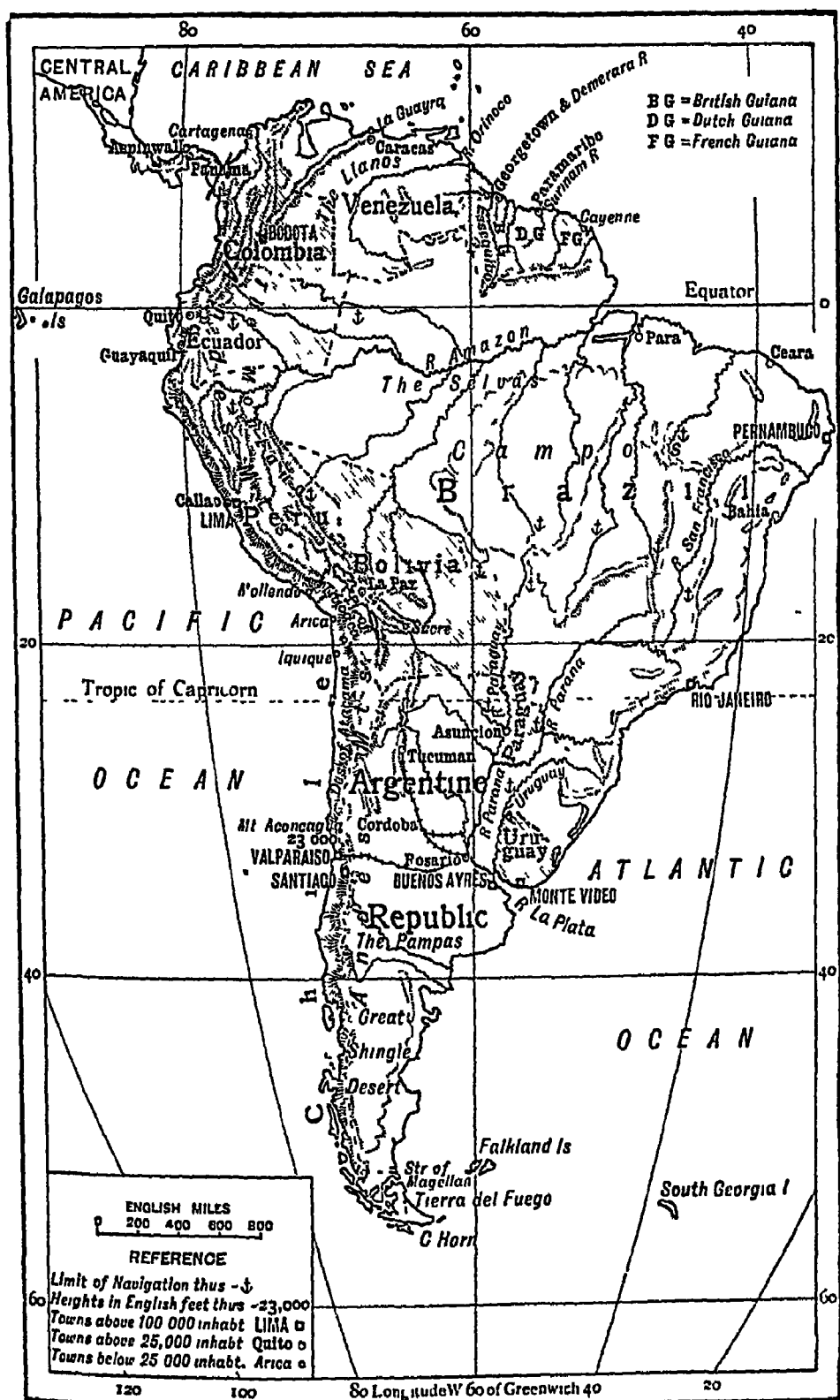
Imports.—Manufactured textile goods, especially of cotton; iron goods and machinery.

Exports.—Coffee, nearly three-quarters of the total, sugar, tobacco, and forest products.

TOWNS—All the large towns are on or near the coast, and are mostly seaports.

Rio de Janeiro (1,000), the capital, is finely situated, and has much trade. Pernambuco (150) and Bahia (290) are the outlets for a well-cultivated and populous district, producing, and to some extent manufacturing, cotton. Other busy ports are Para, which exports rubber, and Ceara.

FIG 121—SOUTH AMERICA PHYSICAL AND POLITICAL



POPULATION.—About 24 millions, consisting of whites of Portuguese descent, Negroes, American-Indians, and half-breeds.

VENEZUELA AND GUIANA

POSITION AND SIZE.—These countries comprise almost all the northern highland region, bordered in Venezuela by the Llanos of the Orinoco and in Guiana by a low coast-strip. Venezuela is nearly 993,000 sq miles in extent, or two-ninths the area of the Indian Empire. Guiana is divided into British, French, and Dutch Colonies

British Guiana is somewhat larger than the united area of French and Dutch Guiana

PHYSICAL FEATURES.—The mountains are steep, and covered with very dense forests. The highest peak is over 8,000 ft high

Many rivers flow from them to the north, especially in Guiana, where the heat and plentiful moisture combine to make the soil very fertile. In Venezuela the Llanos are wide, and become very hard and barren in the dry season. The chief river of Guiana is the Essequibo

PRODUCTS.—The products include the crops of the tropical regions, forest products as in Brazil, and animal products of the cooler grassy tablelands. The chief are coffee, sugar, cocoa, spices, and india-rubber.

British Guiana and Venezuela also produce gold, the former in increasing, and the latter in decreasing amounts.

The Venezuelan pearl fishery is very valuable.

TRADE.—Exports.—Raw products of plantations, forests, and mines

Imports —Manufactured goods and articles of food

The latter are largely imported into Guiana for consumption by the Negroes and Indian and Chinese coolies on the sugar and other plantations

TOWNS —Caracas (85) is the capital of Venezuela, and is situated amongst some hills near the sea. Its port is La Guayra

In British Guiana the capital and chief town is Georgetown, on the Demerara River. In Dutch Guiana, Paramaribo, upon

the Surinam River, is the capital, and in French Guiana the capital is Cayenne.

POPULATION.—In Venezuela over $2\frac{3}{4}$ millions, of whom 300,000 are Indians. The whites are mostly of Spanish descent. In Guiana the total population is under 400,000, of whom more than three-fourths are in British territory. A large number of East Indian and Chinese coolies are employed on the plantations in the low hot districts. There are some Arab convicts in French Guiana.

French Guiana is much behind the other colonies in population and value of products.

COLOMBIA, ECUADOR, PERU, AND BOLIVIA

These are all Andean States, as also is Chile, but they differ from the latter in including the hilly forest region which lies immediately to the east of the great mountain system, and is known as the *Montaña*.

This circumstance and the situation of Chile to the south of the tropics cause a marked difference in the climate and productions of Chile compared with the former countries. Chile will therefore be treated separately.

PHYSICAL FEATURES.—In Colombia and Ecuador the Andes consist of two parallel ranges, enclosing a lofty tableland, which has a temperate climate, and is the home of most of the inhabitants. In Peru and Bolivia there are three ranges, with intervening plateaux. The largest tableland is that of Titicaca, upon which is the lake of the same name. The eastern portion of Colombia extends into the Llanos of the Orinoco. The eastern parts of Ecuador, Peru, and Bolivia are drained by the Amazon and its feeders. The coast-line is very unbroken, with deep water coming up close to the land, and with very few good harbours.

PRODUCTS.—1. *Cultivated.*—Coffee, sugar, cotton, and tobacco are all important crops.

Forest.—India-rubber (in the *Montaña*) and cinchona.

A remarkable decline in the export of cinchona, or Peruvian bark, has taken place in recent years through the cultivation of the tree in India, Ceylon, and the East Indies.

2. *Animal.*—Cattle are numerous, and hides are exported. Wool from the alpaca and vicuña is a valuable product.

3. Mineral—All these countries are rich in minerals, but they are little worked, owing to the extreme badness of the roads and the great difficulty of making railways.

Silver is produced in large quantities, and gold in less amounts. The deposits of guano and nitrate of soda formerly belonging to Peru and Bolivia have mostly been transferred to the possession of Chile.

COMMERCE.—The natural wealth is great, but the exchange of the products of the soil and mines for foreign goods is much hindered by the great elevation of much of the surface and the steepness of the slopes from the coast. Some railways have been constructed, and steamers navigate a few of the rivers, but the total commerce is small in proportion to the extent of these States.

Imports.—Manufactured goods, chiefly from the United Kingdom, United States, Germany, and France

Exports.—Coffee, sugar, cacao, tobacco, hides, silver, and gold; others are india-rubber, cinchona, and cotton.

SEAPORTS—In Colombia, Cartagena is the most important

In Ecuador, Guayaquil is the chief

In Peru, Callao, the port of Lima, and Mollendo have the bulk of the trade

Bolivia now has no port, but carries on most of her trade through Arica, in Peru

OTHER TOWNS—Bogota (123), the capital of Colombia, is 8,500 ft above the sea level, and has a lovely climate

Quito (70), the capital of Ecuador, is similarly situated. Communication with the coast from Quito is very difficult, and the obstacles against making a railway are very great

Lima (140), the capital of Peru, is an old city of Spanish foundation. It is situated in a volcanic region, and consequently suffers from earthquakes

La Paz (78) is the largest town in Bolivia, but the present capital is Sucre.

CHILE

POSITION AND SIZE—Chile extends along the western coast of South America for over 2,500 miles, and has a width which in no part reaches 200 miles, and is in some places less than 100 miles. The area is just under 300,000 sq miles. The eastern boundary is the highest ridge of the Andes. Both sides of the Magellan Strait are Chilean territory.

PHYSICAL FEATURES.—The surface consists almost entirely of ranges of hills projecting westwards from the Andes, with extensive valleys between them. The high Andean peaks include many volcanoes, some of which are active, and the country is extremely subject to earthquakes. The highest mountain is Aconcagua (23,000 ft.), the loftiest peak in South America. The rivers are of necessity short and rapid, and very few of them continue to flow throughout the year. The surface can be divided into three portions.

(a) The northern part, very dry, and embracing the Desert of Atacama. This region is chiefly of value for the abundance of nitrates.

(b) The central strip, with a sufficient rainfall, the home of most of the population, and the chief area of cultivation.

(c) The southern strip, intersected by fjords and including many islands, largely covered with dense forests.

PRODUCTS.—1. The chief crops are wheat and barley, maize, wine and fruits, such as oranges, peaches, and apples.

The climate resembles that of Spain, and there is thus a similarity in their products.

2. **Mineral.**—Nitrate of soda, copper, silver, and coal are the chief.

3. **Animal.**—Cattle and sheep are largely reared.

COMMERCE.—Owing to the energy of the people, the abundance of mineral products, and the nearness of all parts to the sea, the foreign trade is large.

Imports.—Manufactured goods, especially cottons and woollens, and machinery. Cattle, coal, and refined sugar are also imported.

Exports.—Nitrates, copper and silver, wheat and barley, hides.

The trade is mostly with the United Kingdom, Germany, the United States of America, France, and Peru.

SEAPORTS.—There are many ports, but the two chief are Valparaiso (180), the centre of the import trade, and Iquique (16), from which the great bulk of the mineral produce is exported.

CAPITAL.—Santiago (332) is an inland town to the east of Valparaiso.

POPULATION—3,500,000, or about 10 to a square mile.

There are comparatively few Indians or Negroes, but a large mixture of Europeans and white natives of the other South American States

The country has enjoyed a much more settled government than most of the other States, and is very prosperous

ARGENTINE REPUBLIC, PARAGUAY, AND URUGUAY

POSITION AND SIZE.—These three republics occupy the whole of the southern part of South America south of Bolivia and Brazil and east of Chile. The Argentine Republic is next in size to Brazil, being 1,135,000 sq miles, or five-eighths the area of the Indian Empire, Paraguay is 98,000 sq. miles, and Uruguay 72,000 sq miles.

PHYSICAL FEATURES.—The great bulk of this region consists of vast plains, sloping from the Andes towards the Atlantic Ocean, and bearing various names. These plains differ widely in appearance and productiveness. In the northern part is a wide stretch of open forest land, known as *The Great Hunting Ground*, in the centre are the grassy *Pampas*, and southward is a shingly desert. The chief rivers are the *Parana*, *Paraguay*, and *Uruguay*, which form the *La Plata* estuary.

Paraguay and Uruguay resemble in their eastern portions the neighbouring *Campos* of Brazil. The coast-line is generally low, and the sea shallow, especially near the great estuary of the *La Plata*.

PRODUCTS.—The summers are hot, particularly in the northern parts; but the chief products are those of temperate regions.

1. **Vegetable.**—Wheat, maize, and barley are largely grown in all three States. Sugar in the Argentine Republic and Paraguay. *Maté* or Paraguay tea, manioc, and oranges also in Paraguay.

2. **Animal.**—Cattle, sheep, and horses are very numerous, and form a large portion of the wealth of all these States, but especially of the Argentine Republic and Uruguay.

The mineral productions are of slight value.

COMMERCE.—The Argentine Republic is the chief railway region of South America, owing to its great extent of almost

level grassy plains, and the rivers are navigable by vessels of light draught for many hundreds of miles, consequently, carriage of produce is easier than in the other South American countries, and an active commerce is carried on with the other parts of America and with Europe

Imports.—Cotton, woollen, and iron manufactured goods, railway and telegraph material, various articles of food and drink, and fuel—viz coal, coke, and oil.

Exports.—Wool and sheep-skins, hides and horns, live cattle and sheep, beef and mutton (fresh and preserved), and wheat.

The cultivation of wheat is mainly carried on by European settlers, especially Italians

SEAPORTS—Buenos Ayres (1,200), on the right bank of the La Plata, is the largest city in South America, and has grown with great rapidity. It has suffered from the shallowness of the estuary, but by means of dredging, large vessels can now reach the port. It is the chief port and the capital of the Argentine Republic

Monte Video (316) is the capital and chief port of Uruguay. Its harbour is shallow, and large vessels have to anchor two or three miles from the shore

Rosario is a port on the navigable part of the Paraná

Asuncion (60) is the chief town in Paraguay

POPULATION.—Argentine Republic, 7 millions, largely of Spanish descent. The Indians are most numerous in the northern provinces. There are many foreign settlers, principally Italians, French, and Spaniards

Paraguay, 630,000, of whom more than one-fourth are Indians.

Uruguay, 1,200,000, of whom nearly three-quarters are native born

The system of counting the population in the South American States is an imperfect one, and the numbers given must only be taken as an estimate

EXAMINATION PAPERS

- A 1 Name the States of South America, and indicate their position.
- 2 Describe the surface of Brazil, and name the chief products
- 3 What European nations are numerous in South America? Indicate where they form important sections of the population
- 4 Name five seaports of South America, show their position, and mention any two characteristic exports from each

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- B 1 Show in what ways commerce is hindered or advanced by natural peculiarities in South America, and illustrate each statement by reference to some country
- 2 Compare the products of the plains near the mouth of the Orinoco with those near the La Plata
- 3 Name four important mineral products, and state the countries in which they are most abundant
- 4 Say what you can of Caracas, Cayenne, Pernambuco, Quito, Panama, Callao, Santiago, Lima, La Paz, and Asuncion

PRACTICAL EXERCISES

I

- 1 Draw a line from Caracas to Cape Horn and mark the variations in temperature in January (see Map, p 427)
- 2 What countries have the smallest difference between summer and winter temperature?
- 3 What effect has the elevation of the land upon the range of January isotherms of 70° and 80° ?
- 4 Compare the southern winter rainfall of S America with corresponding latitudes in Africa
- 5 Draw a map of S America and Africa and join up the July isotherms of the two continents. What resemblances or differences do you notice?

II

- 1 What are the chief forest and other vegetable products of the basin of the Amazon?
- 2 Draw a sketch map of S America and mark where coffee, sugar and cocoa are grown
- 3 Why is the Amazon basin so thinly peopled?
- 4 From a study of the 'Products' map, what would you expect to be the chief exports from Rio Janeiro and Monte Video?
- 5 What are the least fertile parts of S America?

AUSTRALIA

Australia, in many respects, stands alone among the continents of the world

1. It is the island continent, being 1,800 miles distant from the mainland of Asia, 4,500 miles from Africa, and 8,500 miles from South America

2 It is the only continent which lies entirely within the Southern Hemisphere. Cape York, the northernmost point, lies in the latitude of 10° S

3. Unlike Africa and South America, which it most nearly resembles in other ways, its greatest length (2,360 miles) is from east to west

4. Australia is remarkable for the absence of great rivers, the only one of real importance being the Murray in the south-east

5 The forms of life indigenous to the continent, both vegetable and animal, are unique

6. Although Australia is geologically the oldest continent, there are no relics of ancient civilisation, while all the other continents abound with ancient buildings and other works dating back to very remote ages

BOUNDARIES AND SIZE.—The Pacific Ocean is to the east; the Indian Ocean to the north and west, and the Southern Ocean to the south

The term Southern Ocean is applied to that great mass of water which lies to the south of Australia, Africa, and America, and extends to the Antarctic Circle

Australia has an area of 3 million sq. miles, or four-fifths that of Europe, the next smallest continent.

COAST-LINE.—In compactness of outline, Australia most resembles Africa and South America. The lack of harbours has been partly responsible for the delay in opening up the interior.

Australia stands upon an extensive continental shelf from

which rises the large island of **New Guinea** in the north, and **Tasmania** in the south. A deep sea line separates it from the Asiatic shelf which includes most of the East Indian Islands, and there is also deep water between Australia and New Zealand

Cape York is the most northerly point of the continent, separated from **New Guinea** by **Torres Strait** in which is

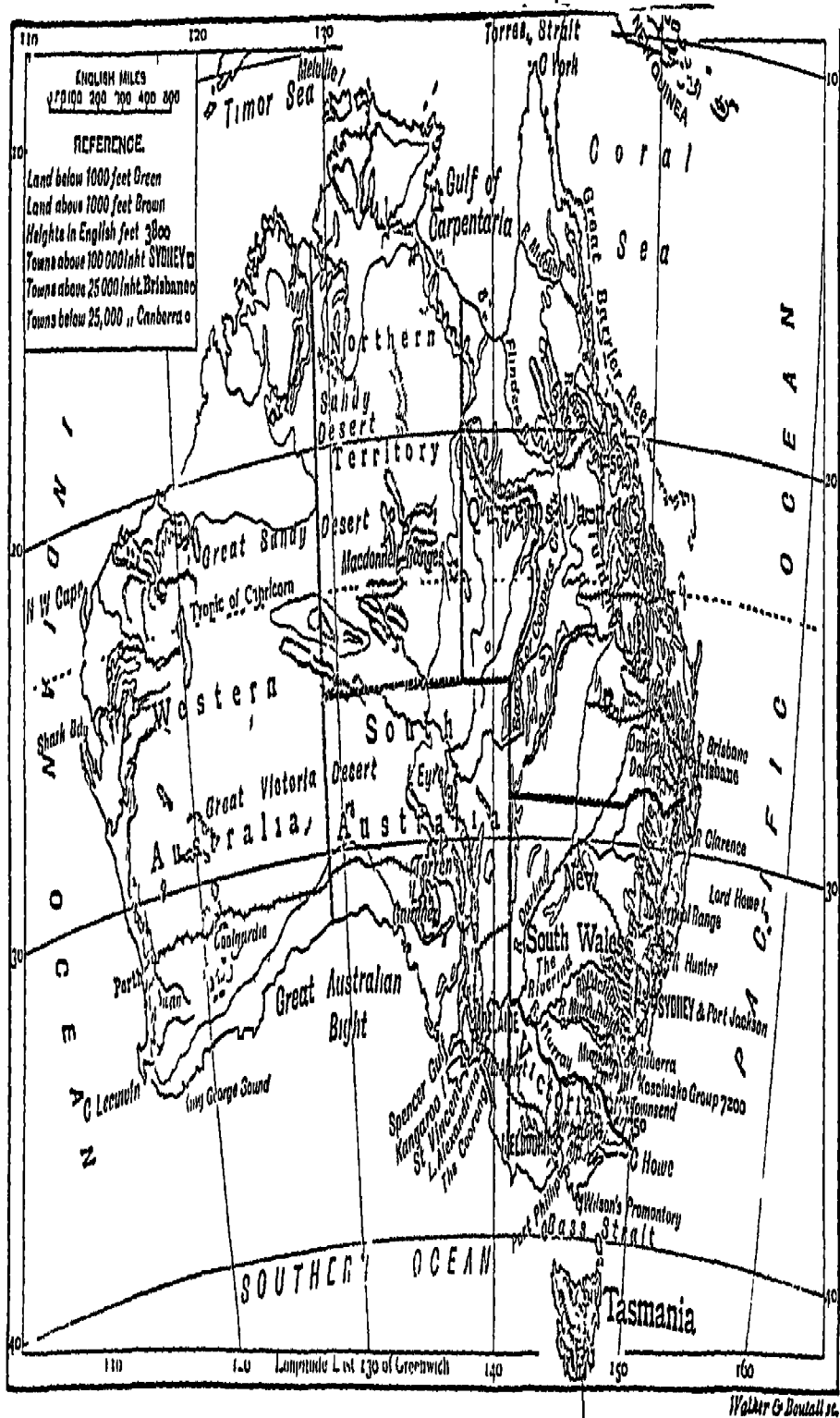
FIG 122 —AUSTRALIA RELIEF



Thursday Island, formerly an important port of call. The shore of **Cape York** peninsula is low until the **Coast Range** is reached, where a rocky broken coast commences which continues to **Cape Howe**.

As far as the **Tropic of Capricorn** the continental shelf is bordered by a coral reef, known as the **Great Barrier Reef**. The

FIG 138—AUSTRALIA PHYSICAL AND POLITICAL



sea inside this natural breakwater is generally smooth, but sailors have to beware of shallows and sunken rocks. Of harbours on this coast **Port Jackson**, on which **Sydney** stands, is the best. **Cape Byron**, south of **Brisbane**, is the most easterly point of the continent.

At **Cape Howe** the coast turns south-west until **Wilson's Promontory**, the most southerly point, is reached. Across **Bass Strait**, 120 miles wide, is the large island of **Tasmania**. **Kings Island** and **Flinders Island** lie at opposite ends of the strait. Beyond **Wilson Promontory** is **Port Phillip**, a fine harbour on which stands **Melbourne**. The coast now trends north-west past **Encounter Bay** into which the **River Murray** falls, **St. Vincent Gulf**, protected seawards by **Kangaroo Island**; and **Spencer Gulf**, which lies in the same depression as **Lakes Torrens** and **Eyre**. At **Cape Catastrophe** commences the **Great Australian Bight**, a long incurve which stretches as far as the south-western corner of the continent. For over a thousand miles the coast is barren, with a background of cliffs—the edge of the plateau—and is exposed to the winds and storms of the **Southern Ocean**.

From **Cape Leeuwin** the low west coast runs almost due north with two bays—**Geographe Bay** in the south, and **Shark Bay** beyond **Steep Point**, the most westerly cape, further north. At **North-West Cape**, the coast turns to the north-east, and runs in an irregular line past valuable pearl fisheries to **Cambridge Gulf**, the largest opening passed being **King Sound**. Navigation is difficult along the whole of this coast owing to the shallowness of the sea, and the irregularity of winds and currents. The peninsula of **Arnhem Land** has **Melville Island** at the north-west, and **Cape Arnhem** at the north-east. It is bounded by **Cambridge Gulf** and **Queen's Channel** on the west, and the **Gulf of Carpentaria**, the largest opening on the Australian coast, on the east.

RELIEF.—In the general disposition of their surface features the continents may be arranged in pairs

1 In **Asia** and **Europe** the great highlands extend outwards from a central mountain mass and there are great plains in the north

2 In **North** and **South America** the main ranges extend throughout the length of the continents on their western sides,

and great plains lie between these chains and highlands on the east

3. The greater part of Africa and Australia consists of plateaux with bordering mountains and coast plains. Each of these continents also contains an extensive desert.

The chief mountains of Australia lie along the east coast, where the great **Dividing Range** is known by different names in different parts. In Victoria the **Australian Alps** reach a height of 6,500 ft (about the height of Simla), in New South Wales the **Kosciusko Group** has Mount Townsend, 7,250 ft. high, and further north are the **Blue Mountains** and the **Liverpool Range**, in Queensland are the **Coast Range** and the **Darling Downs**.

These highlands generally present a steep face on the Pacific side, but slope away gently to the interior where two ridges separate three important areas of drainage—(1) the Murray-Darling basin in the south-east, (2) the area of inland drainage in the centre, (3) the Gulf of Carpentaria system of rivers in the north. The basin of the Murray is separated from the depression containing Lakes Eyre and Torrens and Spencer Gulf by the **Flinders Range**.

West of this lowland area is the great desert plateau covering nearly the whole of South and Western Australia and surrounded on three sides by a coast plain. This desert resembles the Sahara and bears different names, the **Great Sandy Desert** in the north, and the **Victoria Desert** in the south. Bounding it in the east are the **Macdonnell Ranges** of mountains, and in the south-west, the **Darling Downs**.

The coast plains are of varying width and fertility

DRAINAGE.—Australia differs from Africa in being singularly deficient in large rivers. A considerable portion of Africa lies in the equatorial belt of heavy rainfall and many large rivers take their rise in the heart of the continent. In Australia, on the other hand, the Tropic of Capricorn passes through the middle of the continent, which consequently lies in the dry belt of the Southern Hemisphere.

Most of the permanent rivers in Australia are in the east and south-east where the rainfall is greatest, and where the streams are fed by the melting of snow on the **Dividing Range**. On the north coast, where the climate is tropical, there are numerous

short rivers fed by the periodical rains, but in these latitudes there are no deposits of snow on the low mountains, and hence a steady supply of water is lacking. The rivers of the western coast are fed by the winter rains, but throughout the whole length of the Great Australian Bight there is not a single stream of importance.

Owing to the configuration of the land, much of the drainage of the plains between the Dividing Range and the western plateau never reaches the sea, but falls into Lake Eyre, the system of inland drainage being similar to the Lake Chad system in Africa, and to the Caspian-Aral and Lob Nor systems in Asia.

1. **The East Coast Rivers.**—The most important are the **Fitzroy** and **Brisbane** in Queensland, and the **Clarence**, **Hunter**, and **Hawkesbury** in New South Wales. These all rise on the eastern slopes of the Dividing Range, and during the rainy season are subject to floods.

2. **The North Coast Rivers.**—The chief are the **Mitchell** and the **Flinders**, which rise on the West of the Dividing Range, and fall into the Gulf of Carpentaria, and the **Victoria** and **Fitzroy**, which flow respectively into Cambridge Gulf and King's Sound. These are all tropical rivers and are fringed with mangrove swamps.

3. **The West Coast Rivers.**—The chief of these is the **Swan** (200 miles long), with **Perth** at its mouth. It is the chief river of the colonised portion of Western Australia.

4. **Inland Drainage.**—Many streams flow during the rainy season into **Lake Eyre**, the surface of which is below sea-level. The longest of these streams are the **Diamantina** and **Cooper's Creek**, but in the dry weather the streams dwindle away and often dry up, and the lakes become mere swamps.

5. **The Murray-Darling System.**—The **Murray** is the only really large river in Australia. The main stream is 1,300 miles in length, but the source of the **Darling**, its chief tributary, is 2,345 miles from the sea. The **Murray** rises in the **Kosciusko Group**, and flows in a west and north-west direction, forming the boundary between **Victoria** and **New South Wales**. Deflected by the **Flinders Mountains**, it turns to the south and enters **Lake Alexandrina**, and so communicates with the sea. Connected

with Lake Alexandrina is a long narrow lagoon called the **Coorong**, sheltered by a ridge of sand 100 miles long. The chief tributaries are—on the right bank, the **Murrumbidgee**, which receives the **Lachlan**, and the **Darling**, which with its many affluents drains the greater part of New South Wales, and on the left bank a number of short streams which drain the colony of Victoria.

LAKES.—The Australian lakes resemble the rivers in their varying volume. They lie in depressions of the surface, and their area is much extended in the rainy season. Most of them have no outlet and are salt. They lie in three groups —

1. On the plains in South Australia are lakes **Eyre**, **Torrens**, **Gairdner**, and **Frome**.

2. In the centre of the plateau is **Lake Amadeus**, with smaller lakes in the neighbourhood.

3. In the south-west of the plateau Lakes **Austin** and **Moore** are the largest of several salt lakes.

CLIMATE AND RAINFALL —It must be remembered that the seasons in the Southern Hemisphere are the reverse of ours, and that Australia, therefore, has summer during our cold weather, and winter during our summer, moreover the sun is much nearer the earth in December than it is in June, and consequently the tendency is for temperatures to be relatively higher during the summer of the southern hemisphere.

Australia extends from 10° S lat to $43\frac{1}{2}^{\circ}$ S, or over latitudes corresponding to those of the coast of Asia from the Philippine Islands to Japan. The climate therefore passes from tropical to warm temperate. Round the coast, proximity to the sea prevents extremes of heat, and in the north, especially in Queensland, the elevation renders a tropical climate bearable to Europeans. Much of the desert interior, like the Sahara, has a wide range of temperature.

Australia may be divided into four regions as regards its rainfall.—

1. The northern shores lie in the monsoon region. When the sun shines over the Tropic of Capricorn, moist winds are drawn in and give a climate very similar to that of India in the rainy season.

2. The east and south-east are supplied with rain by the

FIG. 128a—AUSTRALIA AND NEW ZEALAND JANUARY ISOTHERMS AND
RAINFALL DECEMBER TO FEBRUARY.



FIG 128b—AUSTRALIA AND NEW ZEALAND JULY ISOTHERMS AND
RAINFALL JUN 10 AUGUST

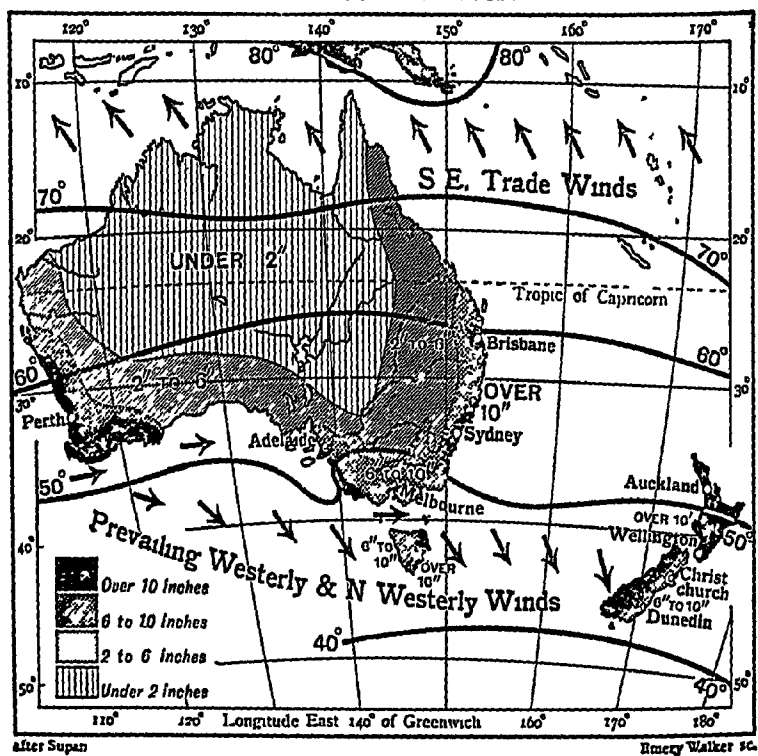


FIG 128c — AUSTRALIA AND NEW ZEALAND VEGETATION AND PRODUCTS

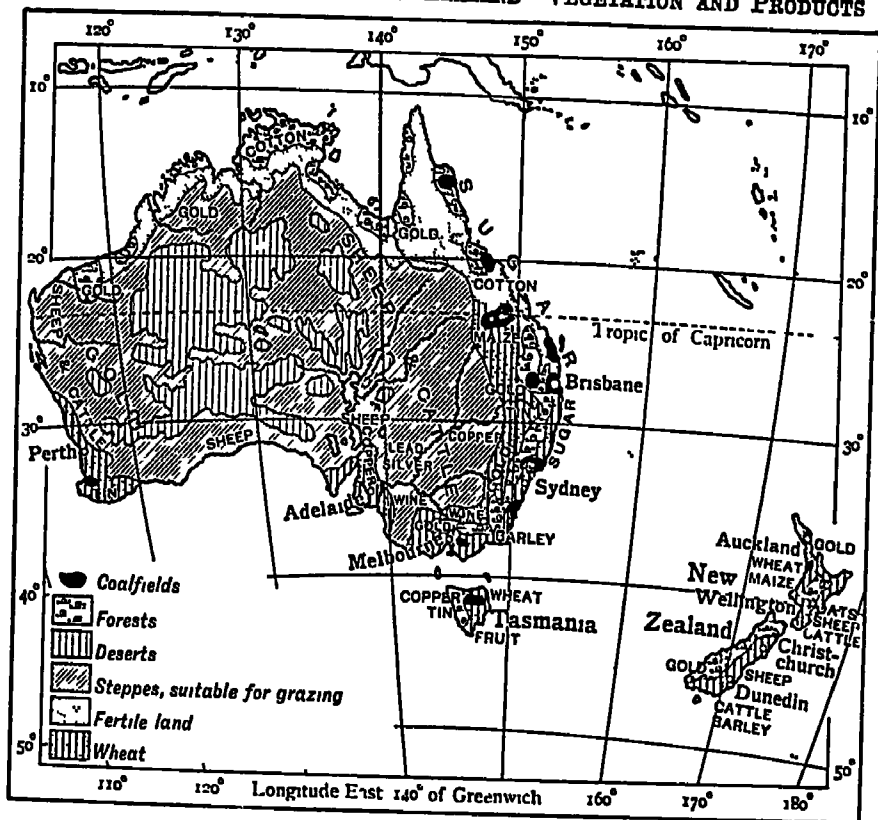
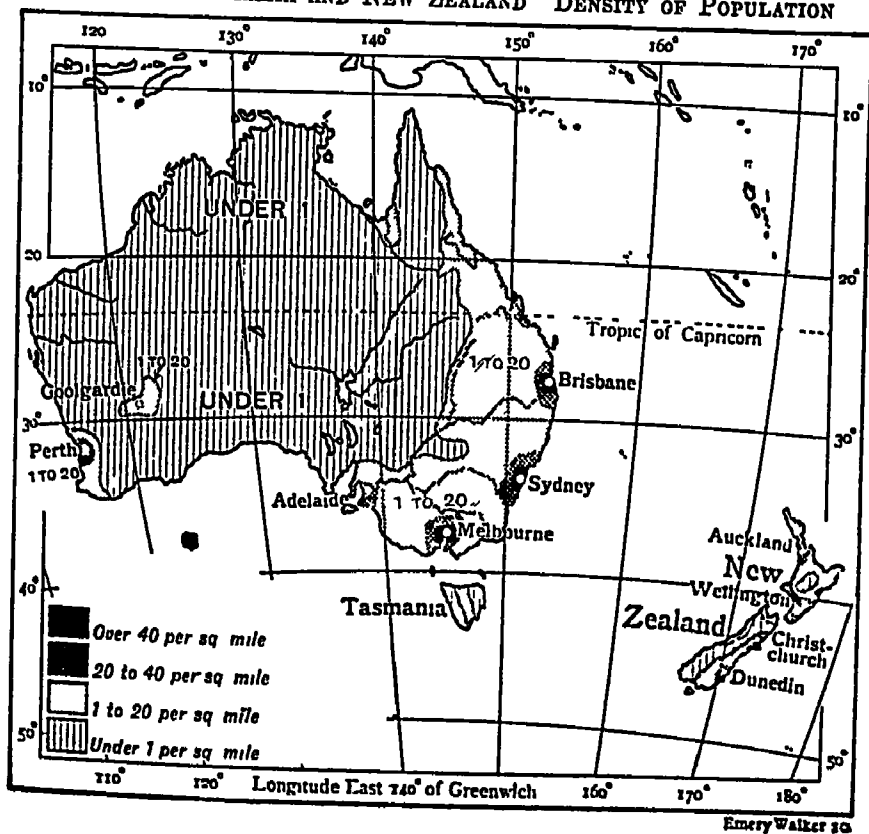


FIG 128d — AUSTRALIA AND NEW ZEALAND DENSITY OF POPULATION



south-east trade winds, which bring good rain all the year round. The amount diminishes from the coast to the interior of the eastern colonies

3. The western and south-western shores get sufficient rain from ocean winds which alternate with land breezes. The heaviest rainfall occurs during the winter in the extreme south-west

4. The interior of the continent is not reached by rain winds at all, and is consequently a desert which extends over the western plateau, from near its northern edge as far as the Great Australian Bight.

FERTILITY OF SOIL.—In the eastern half of Australia a great proportion of the soil is very fertile, and only needs moisture to make it exceedingly productive. Thus, the eastern coast-strip contains alluvial soil, the uplands of Queensland are of rich volcanic formation; and the great plains of New South Wales are of good loam. In the western half a large part of the surface is sandy or stony, and is very barren; but the northern coast is bordered by much very rich low-lying land, and the western part of the tableland produces grass. The country bordering upon the Great Australian Bight is exceedingly dry and barren, but the great southern gulfs are bordered by some good corn land. The amount of absolutely unproductive soil is very much less than it was thought to be by the first explorers. Irrigation by water from the rivers or artesian wells is now being adopted in many parts to make the soil productive

VEGETATION.—The map on page 208 shows the location of the deep-sea line separating Asia from Australasia, which accounts for the remarkable difference between the indigenous life of the two continents. The characteristic trees of Australia are the eucalyptus, with many valuable products, and the acacia. Of smaller growth, the spinifex, a very prickly shrub, kangaroo grass, and saltbush cover great areas, and thrive in dry soils. The saltbush, which survives when grass has died off, is very valuable as food for sheep.

A very large proportion of the surface of Australia can be classified as regards its vegetation into (a) forests, (b) grass lands, (c) deserts

The forests are all situated round the coasts, where there are hilly slopes and abundant rain. The most important tree of the Dividing Range is the eucalyptus. Western Australia exports the timber of the jarrah and karri trees, of which large quantities come to India for railway sleepers. The coconut palm is grown along the northern shores.

The grass lands occupy the plains of the east, and the districts adjacent to the west coast. Vast numbers of sheep, cattle and horses are reared on these pastures.

The deserts of the interior have little vegetation of any kind.

Cultivated Plants.—The variety of climate over the continent has led to the successful introduction of many food plants from other parts of the world. In the warm belt of the north, large crops of maize, sugar, rice, and cotton are grown, and oranges and bananas also flourish. In New South Wales and Queensland, wheat is possible in the elevated districts, but the great wheat-growing areas are in Victoria and the adjacent portion of South Australia. In this part of the continent oats and barley also thrive well. Fruit growing is becoming a very important industry in various parts, leading to the manufacture of wine, and to a large trade in tinned fruits.

Animals.—The domestic animals of Australia are the horse, cow, sheep, pig, &c. The native animals are almost all of the pouched family (marsupials), of which very few species exist in the world except in the Australasian islands. The chief are the kangaroo, of which there are many kinds, the opossum, and the wombat. The only dangerous wild animal is the dingo, or wild dog. That remarkable creature the duckbill is a native of Australia.

Birds are numerous. The emu, a running bird like the ostrich, is the largest. The beautiful lyre bird belongs to Australia. Parrots and cockatoos are abundant in the woods. Birds of Paradise are also found. Reptiles are very numerous—alligators in the northern rivers, snakes, lizards, and scorpions in all parts.

Insects—viz ants, locusts, and bees—are abundant. The white ants are specially destructive.

Fish abound in the rivers and adjoining seas.

The northern coasts of Australia have the most valuable pearl fishery in the world.

Minerals.—Gold, obtained from the soil by washing, and from quartz by crushing, has been the means of advancing the prosperity of Australia both by its actual value and by its attraction of settlers. It is found in all the divisions of Australia, but Victoria has produced the greatest quantity. Silver, lead, tin, copper, and coal are all worked in large quantities.

PEOPLE —White settlers of European race, chiefly British, form the vast majority of the people. The native Australians are a black people of very low civilisation and are called Australian Negroes, though they are not true Negroes. They have never shown any desire to become civilised and are rapidly diminishing in numbers. Their chief skill is in the chase, and their remarkable weapon, the boomerang, is exceedingly ingenious, being so formed as to return to the thrower after having been discharged at some animal or bird. The total population is 5,440,000 [in 1921].

A considerable number of Chinamen form part of the population, but they are disliked by the colonists, and their entrance into the Colonies is now hindered by a heavy poll tax.

Commonwealth of Australia —The five Continental Colonies and Tasmania have adopted a scheme of Federation, which came into force January 1, 1901.

The Executive power is vested in the Sovereign (through the Governor-General) assisted by an Executive Council of seven members. The Legislative power is vested in a Federal Parliament, consisting of a Senate of thirty-six members and a House of Representatives elected on a basis of population.

Each State has Responsible Government, vested in a Governor representing the Sovereign, a Legislative Council, and a Legislative Assembly.

DISCOVERY —During the seventeenth century the coasts of Australia were visited by seamen of Portuguese, Spanish, and Dutch race, and the latter named it New Holland. No European settlement was made until after Captain Cook's voyages of 1770 and following years. He explored the eastern coasts, and it was by his recommendation that the English Government selected that coast as a suitable place for a penal settlement. The first settlement was made in 1788, when a number of convicts were sent to Botany Bay.

EXAMINATION PAPERS

- A 1 In what respects does Australia differ from the other continents ?
 2 Compare the river system of Australia with that of Asia, and account for the most striking differences
 3 Describe the climate and rainfall of Australia, accounting for any peculiarities
 4 Give a brief account of the Great Barrier Reef, the Dividing Range, the Victoria Desert, and the interior river system of the continent
- B 1 State the position of the chief mountain ranges of Australia, naming them, and indicating any important results of such position
 2. Enumerate the chief races of people inhabiting Australia, and account for the presence of each
 3 Name the most important plants, animals, and minerals of Australia
 4 Give a short account of the discovery of Australia
-

VICTORIA

POSITION AND AREA.—Victoria lies south of the Murray, and east of 141° E long.

The area is nearly 88,000 sq. miles (compare with Haidarabad State), or one thirty-fourth the area of the whole of Australia

PHYSICAL FEATURES — Relief. — The Dividing Range crosses Victoria from east to west, in the east the range is highest and is known as the Australian Alps Plains stretch away from the range to the Murray on the north and the sea on the south.

RIVERS.—The Murray forms the northern boundary of Victoria for nearly 1,000 miles, and tributaries on its left bank are the chief rivers of the colony The Yarra-Yarra flows into Port Phillip, and is of importance from having Melbourne on its banks.

CLIMATE AND RAINFALL.—The summers in Victoria are warm, but seldom excessively so, and the winters are mild, with very little frost or snow upon the plains A large amount of snow falls upon the higher mountains, but always melts in summer.

The rainfall on the plains south of the Dividing Range is sufficient, but it is deficient on the plains sloping northward to the Murray.

FERTILITY OF SOIL.—The soil is productive where the rainfall is sufficient, but there is a large district in the west of the colony which is very dry and is covered with scrub. Considerable tracts in the north of the colony have been rendered productive by irrigation.

PRODUCTS.—1. **Vegetable**—The mildness of the climate favours the growth of cereals—wheat, barley, and oats—and fruits. The vine is grown on the lower hill-slopes, and wine is manufactured.

Forest products are also very valuable. Abundance of timber of the numerous species of eucalyptus, and a valuable medicinal oil from the same trees, are produced in the forests that clothe the mountain-slopes.

2 **Animal.**—Sheep and cattle are reared in large numbers, and hence wool, meat, tallow, hides, &c., form a considerable part of the wealth of the colony.

3. **Mineral.**—Gold is produced by quartz-crushing at Sandhurst and neighbourhood. The alluvial gold, which caused the great gold fever in 1851, was found round about Ballarat, but very little of this kind is produced now.

Numerous other minerals occur in Victoria, but are very little worked at present.

Industries.—Sheep-farming, mining, and agriculture employ the greater part of the population. Manufactures are making progress, woollen cloth is woven, and sugar is refined.

TRADE.—The trade is very large, owing to the great amount of animal and vegetable produce available for export, and to the large demand for manufactured goods from other countries.

MEANS OF COMMUNICATION—Victoria owns over 3,600 miles of railway, all State property. Small vessels can navigate the Murray and some of its tributaries, and also some of the coast rivers.

The imports are manufactured goods in great variety, chiefly from Great Britain, woollen, cotton, iron and steel goods being

the most important, raw sugar from Queensland, tea from China and India. The exports are wool, gold, wheat, and flour.

TOWNS—Melbourne (591), on the river Yarra near its confluence with Port Phillip. This is by far the richest and most important city in Victoria, and is the largest in Australia. The city occupies a very extensive site on Port Phillip, and is a flourishing seaport.

Ballarat (48), the largest inland town, stands in the district in which the great gold deposits were discovered and worked so productively in 1851.

Bendigo is the most important gold-mining town at present. Geelong is a port on an inlet of Port Phillip.

POPULATION.—In 1921 about 1,500,000, giving an average of about 17 to a square mile.

Victoria is much more thickly peopled than any of the other Australian colonies.

NEW SOUTH WALES

BOUNDARIES AND AREA.—New South Wales lies north of the Murray, and is bounded on the west by 141° E long, and for most of the distance on the north by 29° S lat.

The area, 310,700 sq. miles, is equal to half that of Persia.

PHYSICAL FEATURES.—**Relief**.—A mountainous plateau occupies the eastern portion. The chief ranges are the Blue Mountains, the Liverpool Range, and in the south the Kosciusko Group with Mt. Townsend (7,250 ft.), the highest peak in Australia. A narrow coast-strip lies between the mountains and the sea, and in the west are the Great Plains, which occupy the bulk of the area, and are scantily watered by feeders of the Murray.

RIVERS.—The Darling, formed by a large number of streams, flows south-west to the Murray. The Murrumbidgee, with its chief feeder the Lachlan, also joins the Murray.

Of the East Coast rivers, the longest are the Hawkesbury and the Hunter. Their mouths, together with Port Jackson, form the chief openings on the coast.

CLIMATE AND RAINFALL.—In the low plains the heat of summer is almost tropical, and frost and snow are unknown. On the uplands of the plateau the temperature is that of cool

temperate regions. Hence there is a great variety of crops cultivated in New South Wales. The rainfall is abundant on the eastern slopes of the mountains, but diminishes towards the west until it is too slight for successful agriculture to be possible without irrigation.

FERTILITY OF SOIL.—Throughout the colony the soil is naturally good, and varies in productiveness with the rainfall. In New South Wales, as in most of the other Australian Colonies, it is becoming the custom to irrigate the dry districts of the interior by water from artesian wells and from the rivers. A very small portion of the colony is as yet cultivated; but large districts produce grasses and saltbush, which furnish food for many millions of sheep.

PRODUCTS.—1 **Vegetable.**—Wheat and maize are the chief crops, and in addition oats, barley, potatoes, sugar-cane, vine, and oranges are cultivated. Great quantities of cereals are grown and cut green for fodder.

Timber from the extensive forests of the eastern hill and mountain slopes is an important product.

2 **Animal.**—Sheep, much the most numerous and important; cattle, horses, and pigs.

3 **Mineral.**—Very rich and varied. Gold, silver, lead, copper, coal, and tin.

Gold is obtained in many parts by the crushing of quartz.

The coal is good and plentiful. The chief coal field now worked is that near Newcastle, on the river Hunter.

Silver is remarkably abundant in the Barrier Range of the west.

OCCUPATIONS OF PEOPLE.—Agriculture, pastoral pursuits, and mining occupy the great bulk of the people. Sheep-farming is very extensively carried on over the great plains of the west, and wool is the most important product and export. Manufactures have begun in the larger towns.

TRADE.—New South Wales exchanges the products of its farms and mines for the manufactured goods of Europe and the produce of tropical climates. The total value of the imports and exports in proportion to the number of the people, is consequently very large.

This is the case with all new colonies, and is especially so in Australia, where gold is produced and exported.

MEANS OF COMMUNICATION—The coast region is fairly well supplied with railways; but the interior, except for two or three lines, has to be traversed along roads, which until recently were very bad, but are now being improved and extended. The State owns almost the whole of the railways (about 3,900 miles). The tributaries of the Murray are navigable by small wool-carrying steamers for a short time after the heavy rains.

Imports.—Manufactured goods of all kinds from Europe, chiefly from the United Kingdom, tea from China, and produce, such as flour, sugar, and fruit, from the neighbouring colonies.

Exports.—Wool, much the most valuable, forming almost two-thirds of the total value of the exports. Coal, silver, gold, fresh mutton, hides, skins and tallow, lead, tin and copper.

TOWNS—Sydney (637), upon Port Jackson, is the capital and chief trading city of New South Wales. It possesses over one-third of the whole population of the colony. The railway system of New South Wales has its centre in Sydney, which is connected by rail with all the chief towns. The city is splendidly placed and handsomely built.

Broken Hill (27) is a mining town of the West, which has grown up in very recent years, owing to the great discovery of silver in the Barrier Range.

Newcastle, on the Hunter, is the second port, and is the centre of the coal-mining and exporting industry.

Parramatta, on Parramatta River, a creek of Port Jackson, has extensive orange gardens.

Goulburn and Bathurst are flourishing inland towns in important farming districts.

POPULATION.—About 2,100,000, or nearly 7 to a square mile.

About 4,000 are natives and 1,100 half-castes. The Chinese (about 10,000) are diminishing in number, owing to the poll-tax imposed to prevent their admission to the colony.

HISTORY—In 1788 the first convict settlement was made at Botany Bay, and three years later the colony was placed under a Governor. At first, New South Wales embraced also Queensland and Victoria; but these were formed into separate colonies about the middle of the nineteenth century. In 1855 the colony received representative government.

QUEENSLAND

POSITION.—Queensland occupies the north-eastern portion of Australia, and embraces almost one-fourth of the total area. A large part of the colony is in the tropics, and many of its vegetable productions are, consequently, of a tropical character.

PHYSICAL FEATURES.—Relief.—The Dividing Range broadens out in this colony, and the Eastern Plateau of Australia is here at its widest, hence there are extensive districts suitable for the same crops as are grown further south in New South Wales and Victoria. The Darling Downs occupy a district in the south-east.

Rivers.—These are fairly numerous, but are very variable in volume. They are subject to heavy floods during the rainy season, and almost disappear in summer. The Brisbane and Fitzroy on the east form good harbours.

Coast.—The Great Barrier Reef, of coral formation, forms a natural breakwater off the east coast. The Gulf of Carpentaria, on the north, is the largest opening on the whole of the Australian coast.

CLIMATE AND RAINFALL.—The situation causes the heat to be great, but it is tempered in large districts by the height of the surface.

A considerable portion of the colony lies within the monsoon region, and the rainfall is consequently heavy on the coast ranges, but it diminishes towards the western boundary.

The soil is generally fertile and very productive, where well watered. Many districts are now irrigated, either from the rivers or from artesian wells.

PRODUCTS.—1. Vegetable.—In the lowlands tropical produce, such as maize, cotton, and sugar, is grown. In the more elevated regions, wheat and other cereals thrive.

2. Animal.—Sheep and cattle.

3. Mineral.—Gold in large quantities.

TRADE.—As in Victoria, very large in proportion to the population.

MEANS OF COMMUNICATION—4,500 miles of State-owned railways
Roads are bad Rivers not useful for navigation

Imports—Manufactured goods and provisions

Exports.—Gold, wool, sugar, meat, tallow, and hides and skins are the most valuable.

TOWNS—Brisbane (50, or, with the suburbs, 143), upon the river Brisbane, is the capital and largest town, and is the chief centre of trade in the colony

Rockhampton (20) is a seaport upon the Fitzroy River, and is the outlet for the produce of Central Queensland

Maryborough (14), on the Mary River, is a rising town in a flourishing agricultural district, about 200 miles north of Brisbane

POPULATION—757,000 in 1921, or about 1 per square mile

SOUTH AUSTRALIA

POSITION.—South Australia consists of South Australia proper and the Northern Territory, the boundary between them lying along the parallel of 26° S. lat. The total area is 900,000 sq miles.

PHYSICAL FEATURES.—**Relief.**—The great plateau which extends over Western Australia commences in South Australia. From the plateau rise irregular mountain chains, of which the Macdonnell Ranges in the centre of the colony are the highest.

The highest peaks of the Flinders Range, east of Spencer and St. Vincent Gulfs, are only 3,000 ft high

The Great Stony Desert, north-east of Lake Eyre, is exceedingly dry and barren

Rivers.—Very deficient in number and volume except along the north coast, where the tropical rainfall produces a good number of streams.

The Murray has its mouth and lower course in South Australia, and is a navigable stream

The inland rivers, Cooper's Creek and Diamantina, also end in South Australia, emptying themselves into Lake Eyre.

In the north, the chief streams are the Victoria, Daly, and Roper, all forming harbours at their mouths, and being navigable for considerable distances

Coast.—The coast is broken by many openings in the north in many places low and fringed by mangrove swamps. In the south the coast of the Bight is a stretch of sandy shore with a background of high cliffs, running almost unbroken for hundreds of miles.

CLIMATE AND RAINFALL—Tropical in the north, and temperate in the south. Except on the northern hilly and coast region, the chief feature of the climate is extreme dryness

SOIL—A very small fraction of the surface has fertile soil. In the south is a good wheat-growing district, and there are fertile valleys amongst the hills. In the north the heavy rains and great heat make the soil very productive of tropical plants

PRODUCTS.—1. **Vegetable.**—South Australia is the chief wheat-growing district of Australia. Other products are grapes and fruits in the south, cotton and sugar in the north.

2. **Animal.**—As in other parts of Australia, sheep, cattle and horses. Camels are used to a considerable extent in the north.

3. **Mineral.**—Copper is the most valuable, the chief mines being situated at Burra-Burra, north of Adelaide.

MEANS OF COMMUNICATION—Over 2,300 miles of railway. The Overland Telegraph Line connects Adelaide in the south with Palmerston in the north

Imports.—Manufactured goods from Great Britain, and tropical colonial produce.

Exports.—Wool, wheat and flour, and copper ore.

TOWNS—Adelaide (192, with suburbs), the capital, is on a plain about seven miles to the east of the Gulf of St Vincent. Its port is Port Adelaide

Palmerston is the chief town in the Northern Territory, and has about 1,200 inhabitants.

POPULATION.—495,000, or about 1 person to 2 sq. miles.

WESTERN AUSTRALIA

Western Australia is a vast region 1,000,000 sq miles in extent, including the whole of Australia west of 129° E. long., and forming almost exactly one-third of the total area.

It is thus the largest of the Australian Colonies

PHYSICAL FEATURES—**Relief.**—The great western plateau of the continent occupies almost the whole of Western Australia. A fringe of low land, widest in the north-west, borders the coast. The plateau is bordered by the Hammersley Mountains and the Darling Range. The plateau is grassy in its

western half, but in the east, where it is away from the influence of the sea-breezes, it is sandy.

Rivers.—The rivers are few in number and very variable in volume. The Swan River, 180 miles long, is subject to heavy floods in the wet season. The Murchison and Fitzroy are of considerable length and are bordered by good grass, but are of no use for navigation.

Coast.—The coast is broken in the north and north-west, but there are few openings on the south and south-west. King Sound and Shark Bay are large openings, but the smaller openings in the south-west are of greater commercial importance.

RAINFALL —The south-west receives sufficient rain, brought by ocean winds which counteract the land breezes, and tropical rains are received in the north, but the great bulk of the area of the colony is very dry.

The soil of the south-west, of the river valleys, and of much of the coast-strip is fertile, and grassy lands suitable for pasture exist on the west of the plateau, but the eastern half of the colony is sandy and quite unproductive.

PRODUCTS.—1. **Vegetable.**—Wheat, barley, and oats are the chief crops. Timber of excellent quality in the forests which clothe the seaward slopes of the western hills

2. **Animal** —Sheep in very large numbers

3. **Mineral** —Gold is now produced in considerable quantities.

TRADE.—Imports —Manufactured goods.

Exports—Gold, pearls and pearl shell, sandal and other cabinet-making woods, wool and skins

MEANS OF COMMUNICATION —Over 4,000 miles of railway are open, including a branch from Perth to the goldfields at Kalgoorlie and Coolgardie, about 360 miles. These railways are now connected with those of the other States by the Continental Railway, completed in 1917. Roads are bad and few in number.

TOWNS —Perth (84), on Swan River, is the capital. Fremantle (19) is a calling port for mail steamers.

POPULATION.—The colonists are mostly collected in the south-western corner of the country, where the climate is good, rainfall sufficient, and soil fertile. The total number of the inhabitants in the whole colony is only about 332,000, or less than the population of Madras.

TASMANIA

Tasmania is a lovely island lying at a distance of 120 miles from the extreme south of Australia, and separated from it by Bass Strait. The island is about the size of Ceylon, and is roughly heart-shaped.

PHYSICAL FEATURES.—Tasmania is a continuation of the eastern highland of Australia, the connection being seen in the numerous islands which lie between Tasmania and the coast of Victoria. The highest peaks of the island are over 5,000 ft. high.

Very many rivers flow in all directions from the highlands to the sea, but they are generally too rapid for navigation. The Derwent has Hobart, the capital of the colony, upon its right bank.

There are several beautiful lakes in the interior of the island. Great Lake is the largest.

CLIMATE AND RAINFALL.—The climate is warm temperate, and is agreeable and healthy. Snows fall upon the uplands, but very little in the valleys. The rainfall, owing to the proximity of the sea, is abundant, and not subject to such variations as in Australia. The soil is mostly very fertile.

PRODUCTS —1. **Vegetable.**—The grain crops of the temperate zone—wheat, barley, &c.—and fruits grow freely.

Trees are very abundant, and furnish excellent hard timber, gums and resins.

2. **Animal.**—Domestic and wild animals as in Australia.

3. **Mineral.**—Copper and tin are the most extensively worked.

COMMERCE.—Most of the external trade is with England, and is chiefly carried on in British vessels. Home trade is encouraged by the railways that now connect the chief towns, and by coasting and river vessels.

Imports.—Manufactured goods from England, tropical produce, articles of food and drink.

Exports.—Copper, wool, gold, silver, tin, and fruits are the chief.

TOWNS.—Hobart ($41\frac{1}{2}$ with suburbs), the capital, has an excellent situation upon the river Derwent, which is navigable by the largest vessels.

Launceston ($26\frac{1}{2}$), upon the Tamar, is the chief port.

GOVERNMENT as in the Australian Colonies.

POPULATION.—213,000, or about 8 to the square mile, almost entirely British.

EXAMINATION PAPERS

- A 1 State any remarkable facts connected with the commerce of Australia, indicate any disadvantages from which it suffers, and name the chief centres of trade
- 2 Give an account of the Great Barrier Reef, Darling Downs, and the West Australian Plateau
- 3 Name the colonies in Australia, with their capitals and the situation of the latter
4. Name the chief products, animal, vegetable, and mineral, of Tasmania; name the exports and chief centres of commerce
- B. 1. Name the chief watersheds of Australia and the chief rivers flowing from them
2. Say what you can of Geelong, Ballarat, Broken Hill, Goulburn, Rockhampton, and Palmerston
- 3 Describe the soil of each colony, stating causes of local peculiarities if possible, and show how natural hindrances to fertility are overcome in some districts
4. Describe the physical features of Tasmania, drawing a sketch-map to show position of chief mountains, rivers, capes, openings, lakes, and islands
-

NEW ZEALAND

GENERAL DESCRIPTION.—New Zealand consists of a group of islands lying in the Pacific Ocean almost at the centre of the hemisphere of water, as the British Isles are in the centre of the hemisphere of land. The two large islands are traversed by mountains, which reach a great height, and present a charming variety of scenery. These islands are largely of volcanic origin, and there is much volcanic energy still displayed, especially in the North Island. The direction of the mountain ranges causes the rivers to be of only moderate length, but they are numerous and useful. The climate, soil, and productions of New Zealand have combined to make the colony a home for numerous healthy and prosperous British settlers. Unlike the other Australasian Colonies, there is in the North Island of New Zealand a large native population, emulating the white settlers in the pursuit of various civilised industries.

POSITION.—New Zealand consists of two large islands, called the North and the South Islands, and a much smaller one to the

south called **Stewart Island**. The group lies at a distance of over 1,000 miles to the south-east of Australia, and there is no large piece of land for vast distances to the north, east, or south of these islands. The central line of the group points north-east and south-west, and all the coasts are washed by the Pacific Ocean.

Several groups of small islands in the surrounding ocean are included in the colony.

SIZE.—New Zealand extends over about 18° of latitude, and the greatest length is over 1,000 miles. The total area is over 104,000 sq. miles, of which the North Island occupies 44,000 and the South Island 58,000 sq. miles.

COAST-LINE.—The North Island is cross-shaped, and the South Island an irregular oblong. The four points of the cross in the North Island are **C. Maria van Diemen**, **East Cape**, **C. Palliser**, and **C. Egmont**. The chief openings are **Hauraki Gulf** and **Hawke Bay** on the east coast.

The coast of the South Island is much more regular. The largest opening is **Tasman Bay**, with **Cape Farewell** to the west.

The fjords on the south-west coast are of great beauty.

Cook Strait divides the North from the South Island, and **Foveaux Strait** the South from **Stewart Island**.

RELIEF.—The islands are largely volcanic in origin.

The North Island.—The wide portion is almost filled with mountains and high plateaux, which are bordered by lowlands extending to the coasts. **Mt. Egmont** is more than 8,000 ft high and is remarkably beautiful.

The volcanic region of the North Island is a large district full of the evidences of the activity of subterranean forces. There are active volcanoes discharging lava or mud, and very numerous boiling springs and geysers, whose water possesses many medicinal properties. The district is resorted to by numbers of invalids and is also a great holiday resort.

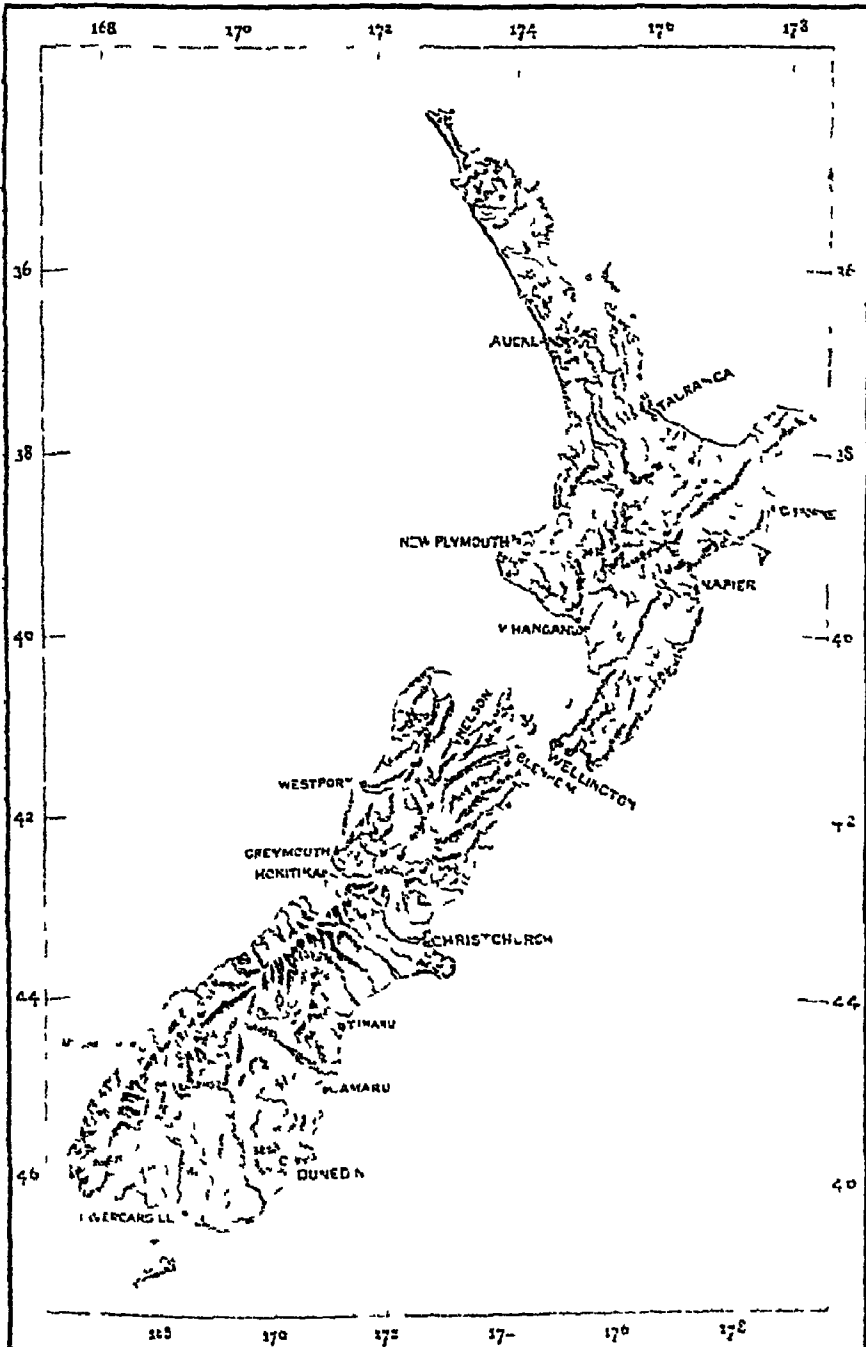
The South Island.—The great mountain ridge lies nearer to the west than to the east coast, forming, in fact, much of the western coast-line. The chief slope is therefore to the east. The **Southern Alps** form the central and highest portion of the range. **Mt. Cook**, 12,000 ft., is the highest peak.

The mountain scenery of the South Island is remarkably grand, and embraces snow clad peaks, great glaciers, lofty waterfalls, numerous rivers and lakes, and vast forests.

RIVERS.—The Waikato is the chief stream in the North Island. The Clutha, 170 miles, in the South Island, is the longest river in New Zealand.

From the relief of the country it is impossible for very long rivers to exist in New Zealand.

FIG. 124 —RELIEF MAP OF NEW ZEALAND



LAKES.—Taupo, 200 sq. miles, in the North Island, and Te Anau, 132 sq. miles, in the South Island, are the largest lakes.

There are many other lakes, particularly in the South Island, and some are famous for beautiful scenery

CLIMATE AND RAINFALL.—Although the whole of New Zealand is nearer to the Equator than the southernmost point of the British Isles, there is considerable resemblance in the climate of the two groups.

The vast ocean surrounding New Zealand has the effect of preventing extremes of heat or cold in the lowlands, and also of reducing the difference between the average temperature of the extreme north and south. The highland regions experience very severe winters, with much snow. The rainfall is much heavier in the west than in the east, but is everywhere sufficient for agriculture.

The soil is consequently fertile, especially in the river valleys, and there are no barren wastes such as occupy a large portion of Australia

PRODUCTS.—1. *Vegetable.*—The vegetation is that of the Temperate Zone. The chief crops are wheat, barley, and oats.

The forests produce good timber from the various pine trees. Kauri gum is dug on the sites of ancient forests in the North Island

2. *Animal.*—The islands are peculiarly deficient in wild animals. The chief domestic animals are sheep, cattle, horses, &c. The area round Mount Egmont is one of the finest grazing grounds in the world

Mutton to the value of over two millions of pounds a year is now exported in vessels fitted with cold chambers

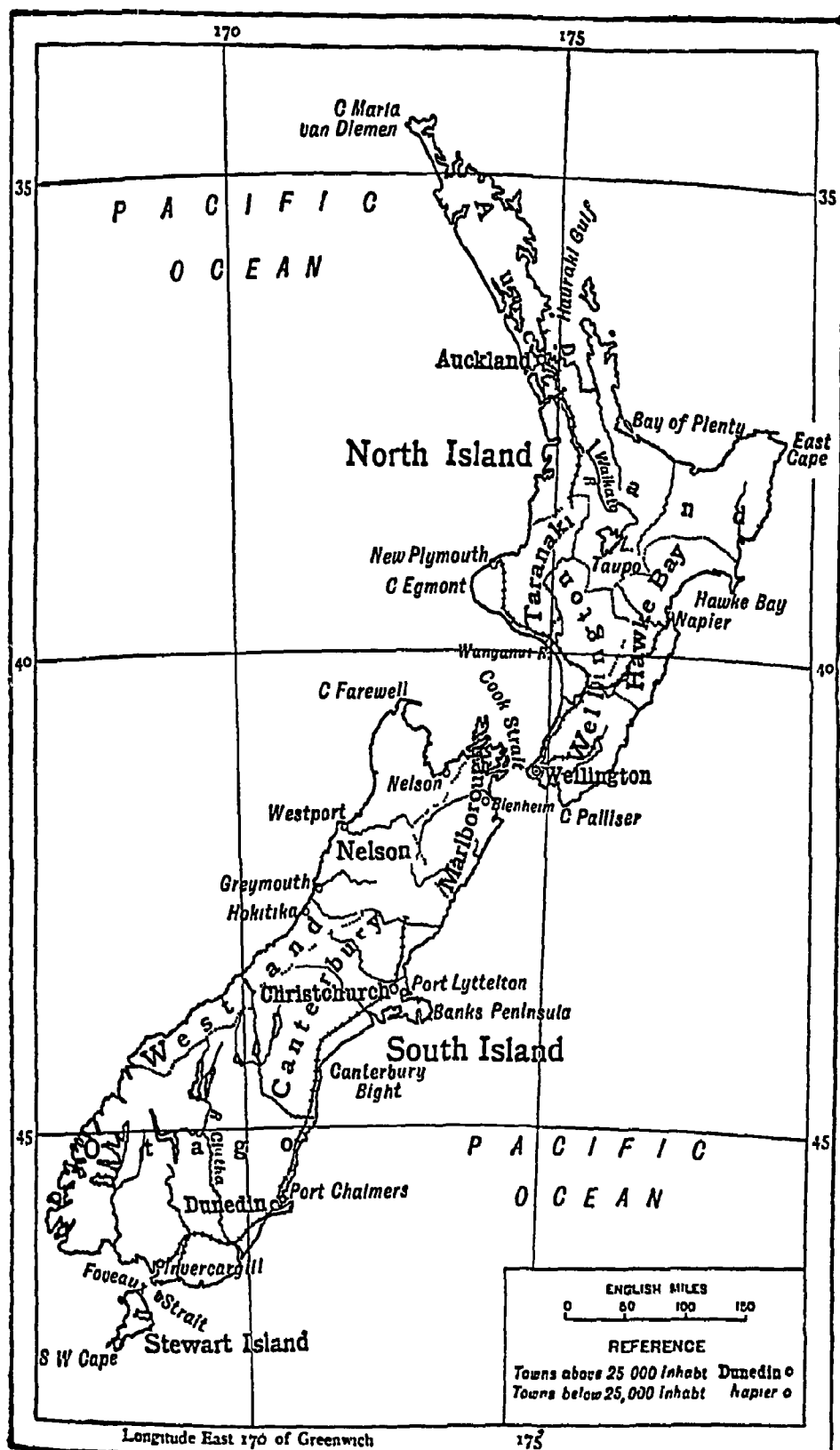
3. *Mineral.*—Gold and coal are the most important minerals worked.

The gold is obtained by quartz crushing in the North Island, and from alluvial deposits in the South Island

The best coal is obtained on the western side of the South Island

MANUFACTURES.—There are many manufacturing works and factories, but there is no staple manufacture, and the colony is mainly dependent upon the United Kingdom for manufactured goods. Wool is made up into strong, useful tweeds, rugs, &c., and factories are rapidly springing up for the manufacture of butter and cheese.

FIG 125—NEW ZEALAND PROVINCES



TRADE.—Foreign trade is almost entirely an interchange of vegetable, animal, and mineral produce, for manufactured goods, tropical produce, and articles of luxury.

MEANS OF COMMUNICATION —The State has constructed and owns the railways, which have a total length of about 2,900 miles. Roads are difficult to make and are not good, especially in the South Island.

SEAPORTS.—The five chief seaports, in order of the value of their imports and exports, are Port Lyttelton, Dunedin, Wellington, Auckland, and Napier.

Port Lyttelton, on Port Cooper, an opening in Banks Peninsula, is the port of Christchurch, and is the outlet for the produce of the large and fertile province of Canterbury.

Dunedin, upon Otago Harbour, is the chief port in the southern portion of the South Island.

Wellington is situated upon Port Nicholson, which is an extensive and very safe harbour with deep water.

Auckland is situated upon the east side of the narrow isthmus which connects the north-western peninsula with the main portion of the North Island. A short railway connects it with Manakau Harbour, a fine inlet on the west coast.

Napier, upon Hawke Bay, is the only important port between Auckland and Wellington.

IMPORTS.—Woollen, cotton, silk, and linen goods; iron and steel goods and machinery; sugar.

The great bulk of the imports comes from the United Kingdom.

EXPORTS.—Wool, frozen meat, gold, grain, butter and cheese, Kauri gum.

Three-fourths of the exports are taken by the United Kingdom.

TOWNS —Auckland (110) was until 1865 the capital of the colony and is still the largest town. The necessity for a more central position caused the change of capital.

Christchurch (96) is the most important town in the South Island.

Dunedin (63) is a flourishing town 230 miles south of Christchurch.

Wellington (91), upon Port Nicholson, is the capital of the colony.

GOVERNMENT —New Zealand resembles the Australian Colonies in having two elected Houses of Parliament and a Governor appointed by the Crown. The title of the Dominion of New Zealand was adopted in 1907.

POPULATION —Over 1,200,000, about 12 to a sq. mile. About 50,000 are Maoris, as the natives are called.

The Maoris are a race much superior to the Australian natives in intelligence. Many of them have adopted European dress, manners, and occupations, but others prefer the condition of their ancestors

EXAMINATION PAPER

- 1 State the position, boundaries, length, breadth, and area of New Zealand
 - 2 Describe the relief of the North and South Islands, mentioning the chief mountain ranges and peaks, and also any large plains or tablelands
 - 3 Describe the climate of New Zealand, and show how it affects the character of the vegetation both indigenous and imported
 - 4 Name two ports in each of the two large islands, stating their position and any facts of interest connected with them
 - 5 Give some account of the people of New Zealand, with their government and occupations
-

ISLANDS OF THE PACIFIC

In the Pacific Ocean, to the east of the Malayan and Australasian Islands, lie a vast number of islands, most of which closely resemble each other in structure, products, and inhabitants. The greater number of them are situated between the Equator and 20° S lat., but there are also several groups between the Equator and 10° N lat., and the northernmost group, the Sandwich Islands, is in 20° N lat.

MELANESIA.—The islands lying north of Australia, inhabited by Papuans, are grouped under the term **Melanesia**, or 'Islands of the Blacks,' the people being very dark

The chief of these are New Guinea, the numerous islands grouped under the term **Bismarck Archipelago**, **New Caledonia**, **Solomon Islands**, and **New Hebrides**

General Description.—The Melanesian Islands are generally mountainous, and are frequently bordered by coral reefs. The climate is hot, though tempered by the ocean, and the products are of a tropical nature. Thus, cotton, sugar, bananas, yams, and coco-nuts will grow freely. The Papuans resemble the East African natives in appearance, and are mostly very fierce in character, practising cannibalism and head-hunting.

Nearly all of these islands are either directly owned or are protected by four European nations—viz. Great Britain, Germany, Holland, and France.

Climate.—Most of the islands of Melanesia and Polynesia lie within the tropics, and therefore have a hot climate; but the heat is pleasantly tempered by the ocean, and varies very little. The rainfall is generally heavy at certain seasons, and the vegetable productions abundant. Except in New Guinea, the climate is mostly healthy for Europeans.

NEW GUINEA.—This great island has an area of about 300,000 square miles, and extends over about 20° of longitude and 10° of latitude. The western portion, comprising almost one-half of the island, belongs to the Dutch, and the remainder is under British control. The natives are numerous, and are in many tribes, which differ considerably in customs and character. European settlers are very few in number, the climate being very unhealthy for them. The south-eastern portion is called the "Territory of Papua," and is under the control of the Commonwealth of Australia.

The **SOLOMON ISLANDS** and the Santa Cruz group are under the protection of Great Britain. The New Hebrides are protected by Great Britain and France.

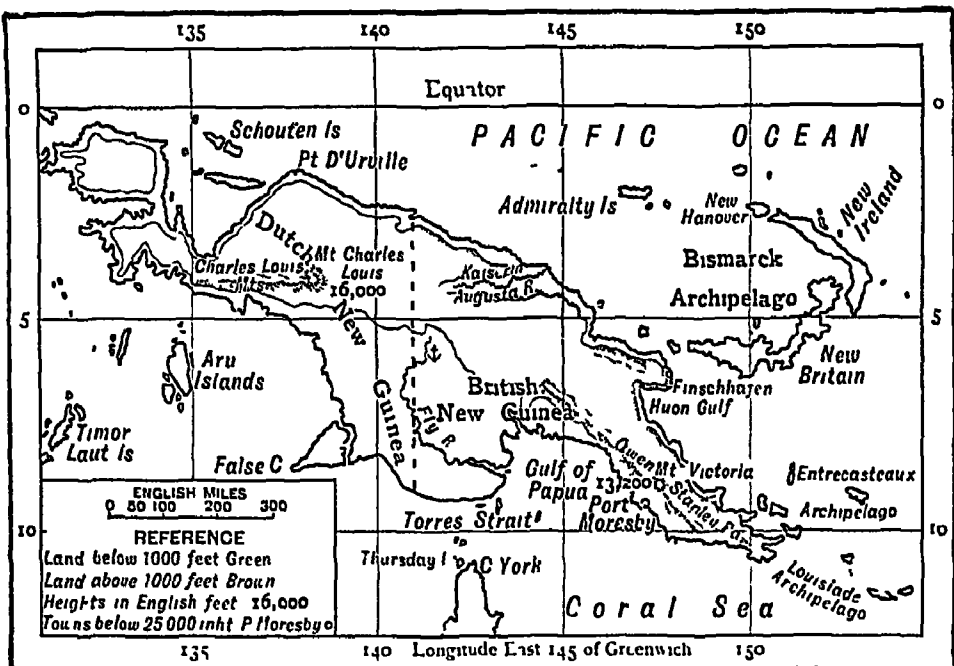
FRENCH ISLANDS—New Caledonia and numerous adjacent islands form a French colony. New Caledonia itself is a large island, and is used as a penal settlement for French convicts. The soil is largely tilled by released prisoners, and is very productive.

POLYNESIA—The innumerable islands of Polynesia are scattered over 40° of latitude and more than 100° of longitude, and are either of volcanic or coral formation.

The volcanic islands are mostly mountainous, and are surrounded by reefs of coral, through which there are openings, more or less deep, for vessels. The mountain-slopes in these islands are clothed with dense tropical vegetation, and the soil is fertile, producing food for man with very little effort on his part.

Breadfruit, coco-nuts, and yams are widely spread, and are the food of great numbers of the people.

The coral islands are small and low, and vast numbers of them are not yet fit for human habitation. Many of them are true atolls, that is, ring-shaped, with a lagoon in the middle, and frequently a coral reef at some distance surrounding the island. The inhabitants are of Malay stock, similar to the Maoris, and vary very much in disposition, some being gentle and friendly, while others are extremely warlike and suspicious. Of the inhabited islands, many are owned by Great Britain,



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France, and Spain, and others are either partly or entirely independent

ISLANDS RULED BY BRITAIN.—Fiji Islands—This group is the most important of the British possessions in Polynesia. The soil is very fertile, and largely cultivated by Indian coolies working for European planters. The chief products are sugar, coco-nuts, and bananas. The largest island is Viti Levu, and on this stands Suva, the capital. Britain possesses numerous other groups and detached islands, which are valuable as coaling stations

The Bismarck Archipelago has an area of nearly 20,000 sq. miles, and consists of a great number of islands

ISLANDS RULED BY FRANCE — Society Islands — These are very lovely islands, with an agreeable climate and friendly people. The chief island is Tahiti, or Otahete, so often visited by exploring and other vessels

France also claims authority over the Marquesas Islands, but the inhabitants are very fierce and warlike

ISLANDS OWNED BY THE UNITED STATES — Sandwich Islands and Samoa — The Sandwich Islands lie in the north Pacific, and are a very mountainous group, with much good soil and a pleasant climate. Two mountains reach a height of about 14,000 ft., but the most remarkable mountain is that of Kilauea, which is a great crater containing a lake of constantly boiling lava. The chief product of these islands is sugar, which is exported to the United States. The capital is Honolulu, and the largest island Hawaii. The islands once formed a Republic, but have now been annexed by the United States

Samoa, or the Navigators' Islands, is a group of islands of which Tutuila now belongs to the United States

Tonga, or Friendly Islands, are under the protection of Great Britain

EXAMINATION PAPER

- 1 Describe the physical peculiarities of the islands of the Pacific
- 2 Under what government are New Guinea, the Fiji Islands, New Caledonia, the Sandwich Islands, the Society Islands, and Samoa?
- 3 Name the races of people inhabiting Melanesia and Polynesia, and show any points of difference in their appearance and character
- 4 Describe the climate of the Pacific Islands, and name the chief vegetable products

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